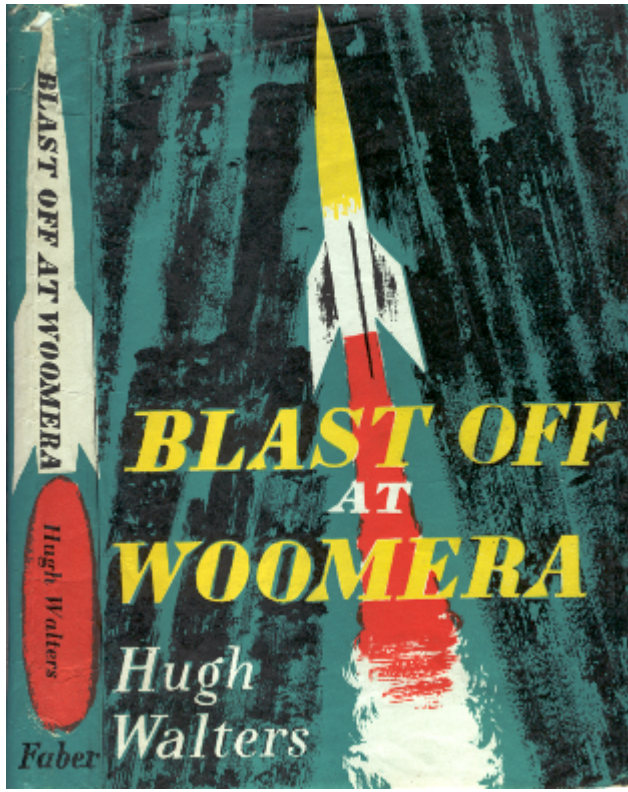

aka Blast-off at 0300

Blast Off At 0300

by

Hugh Walters

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BLAST-OFF AT 0300

Chapter One

Chris Godfrey was not pleased when he was picked to be one of the boys to pass refreshments at the tea following the championship games at his school. But he had not known then that Sir George Benson, the brilliant scientist and rocket-research expert, would be there.

"Are you one of the boys who's leaving next week?" Sir George inquired pleasantly, as Chris carefully handed him a cup of tea.

"Yes, sir," Chris answered, "I hope to get to Cambridge. I want to take a science degree." Chris balanced the loaded tray and looked hopefully at the important scientist. "If you don't think it cheeky, sir, could I ask you sometime if you think I'd have any chance of doing rocket research when I'm qualified?"

The headmaster, nearby, smiled and said, "Christopher is our honor graduate in science. I'm confident he'll go on to do big things, both at Cambridge and later."

Sir George Benson looked more closely at the small, obviously intelligent boy. "Come with me to the airfield in my car," he said. "We can talk as we go."

"Thank you very much indeed, sir."

"Not at all, my boy. I'll be leaving about six thirty."

Chris moved away with his head in a whirl. What luck! In less than an hour he was going to have a talk with the greatest rocket expert in the British Commonwealth.

A little after six Chris began his watch beside the R.A.F. car waiting on the drive outside the main entrance. A minute or two past six thirty he saw the

tall figure of Sir George, accompanied by the headmaster and several others, coming down the steps. As he strode down the path, he saw Chris and beckoned to him to get into the car. The uniformed corporal started the motor, and as soon as the cordial farewells were said, they sped along the road to the airport.

Chris felt the eyes of the scientist scrutinizing him. "Well, son, not much time before we arrive. What can I tell you?"

Chris spoke more boldly than he felt. "Do you think rocketry has much scope and future, sir? I've always been keen on it, and I'd like to get a job in that field—provided I qualify, of course."

"There's all the future in the world in it," Sir George replied. "As to scope, well, the sky's the limit. Literally. I think you'll have no difficulty in getting an appointment with the government provided your qualifications are all right. They'll need all the scientists they can get for years to come."

As they talked on, Chris became so interested in the conversation that he did not notice when the car reached the airfield. He came to as it pulled to a stop outside the administrative building.

"I hope your parents won't be worried about your being late getting back," Sir George said as they stepped from the car.

Chris shook his hand. "I have no parents, sir. I live with an aunt, and she won't mind. Thank you very much for this talk, sir. If I ever get to the Woomera Rocket Research Station, I hope you're still director there."

With a friendly pat on the boy's shoulder, Sir George wished him good-by and turned to greet the officer who was saluting respectfully. A few moments later Chris watched the helicopter rise smoothly, diminish to a tiny speck, and disappear in the distance.

Very little work was done by the senior boys during the last few days of the school year. The headmaster interviewed each boy who was leaving, but since Chris had already had his session it was a considerable surprise to him on the morning of the last day to be called to Mr. Berry's study again. Wonderingly, Chris walked down the familiar corridor and rapped on the study door. He heard the "Come in" and, still mystified, went into the room.

Two men, backs to the empty fireplace, faced Chris as he moved forward. One was the headmaster, looking, Chris thought, very solemn. The other was Sir George Benson. Chris stood waiting.

"I understood, Godfrey, that you and Sir George Benson had a chat when he was here on Saturday," Mr. Berry began.

"Yes, sir. He was most kind to me," Chris replied.

The scientist, with a smile, shook hands. "You didn't expect to see me again so soon, young man, did you?" he grinned.

"No, sir, I didn't. Is it about the job?" Chris inquired eagerly.

"Well, yes, in a way it is," replied Sir George, more seriously now.

"Sir George wants to have a long talk, Godfrey, so we may as well sit down," Mr. Berry said. Soon all three were seated in the headmaster's leather armchairs.

"Something has happened since I saw you last that may mean you can work for rocketry at once," Sir George told Chris. "Would you like that?"

"Of course, sir; but I shall have to get my degree first, shan't I?"

"A degree is essential, of course, but not for what I have to propose to you now." Benson paused for a moment, choosing his words carefully. "Mr. Berry has been good enough to give me your history in considerable detail. I know about your standing in physics, chemistry, and math, and IVe also been told a little about your personal history. What I have to propose to you is something of a very special and dangerous nature. Before any final decision can be made, your aunt, who I understand is your nearest relative, would have to be consulted. But I want to put the matter to you first, because it mustn't get to more people than is absolutely essential, and if you don't want to do it, it won't be necessary to trouble your aunt at all."

Chris, more intrigued than ever, listened intently. He saw that both men were regarding him gravely.

"I know a little of Sir George's proposition," the headmaster said, "and I ask you, Godfrey, to be very careful before committing yourself. Youthful

enthusiasm and your interest in science might cause you to make a rash decision. Sir George agrees that you must not be allowed to give your answer today, though he tells me the matter is urgent. Listen carefully to what he has to say, and when he has finished ask him any questions you wish."

"If Christopher wouldn't mind, I think I'd prefer him to ask his questions as we go along," Benson said. "I don't mind your interrupting me at any time you like."

"Thank you, sir, I'll do that if I may," the boy said.

"Good! Then here we go. Woomera, as you know, was built a few years ago by the British and Australian governments as a rocket research station. It's surrounded by hundreds of miles of Australian desert and is probably the most suitable site in the British Commonwealth. The United States has several rocket proving grounds and has devoted 12

great efforts and vast sums of money to the development of high-altitude rockets. We keep each other informed about progress, though we work quite independently. We've been impressed by the Russian satellites, and we don't know what else they're about to accomplish. As things are at present, it's essential that the Western powers should press on with experimental work as rapidly as possible."

Sir George paused, but there was no question from the intent Chris.

"Quite apart from their military value, high-altitude rockets are now essential tools for a number of branches of scientific research," Benson went on. "They can be fitted with specially designed instruments, which take continuous readings throughout the flight. These readings are reproduced by radio on receiving instruments at our control headquarters."

"Is that what's called 'telemetering'?" asked Chris.

"Yes, and it's surprising what a vast amount of information can be obtained by it—records of temperature, air pressure, different kinds of radiation, strength of the magnetic field, and so on. Physicists, meteorologists, and many other scientific workers are supplied with the information; new fields of investigation have been opened up. And some very wonderful films have

been taken of the earth's surface from different altitudes."

"What height have rockets reached, Sir George?"

"I can't disclose the very latest figures, but as long ago as February, nineteen forty-nine, the United States reached an altitude of two hundred and fifty miles. It was with a two-stage rocket, that is, a large one carrying a smaller. The small one is fired as the parent rocket becomes expended. Lately experiments have been concentrated on single-stage rockets. In May, nineteen fifty-four, the Viking Number Eleven rocket, fired at White Sands in the U.S.A., reached an altitude of one hundred and fifty-eight miles. That's a

record for single-stage projectiles. The rocket was forty-two feet long and weighed seven tons and a half. It reached a maximum speed of forty-three hundred miles an hour, and carried over six hundredweights of instruments. Of course it took months of preparation before it was fired, and months more for investigation of the results."

"Are the Americans more advanced than we are? You haven't said much about British rockets."

"I'm afraid our results at Woomera have so far been less spectacular. But weve plenty to be proud of, and in some branches we're well ahead. I wish we were allowed to publish more about our achievements, but you can understand why that can't be done."

"Has anyone been up in a rocket?"

For some reason the question seemed to disconcert the scientist. Mr. Berry, too, suddenly became tense. There was an awkward pause.

"No human being yet," Benson replied quietly after a moment. "Of course you could almost describe some of the latest American and British planes as rockets; they're propelled like rockets, and reach heights and speeds far beyond those ever reached by conventional planes. But as for true rockets —no. No one has yet been inside one during flight. Living creatures have frequently been sent up, like the Russian dog that was in Sputnick IL We've wanted mainly to discover the effects of cosmic radiation. First of all we sent fruit flies; they were studied through many generations to see if

radiation had any effect on mutations. Then some white mice were sent up in special cages. A film was taken of them throughout the flight, and their reactions during free fall were very interesting."

"What's 'free fall'?" Chris asked.

"It's a more correct description of the state that's often called zero gravity.' Actually the pull of gravity is always present. Of course it diminishes as the distance between the 14

two attracting bodies increases, but we haven't yet reached a height where gravity is reduced by much more than five per cent. If we allow ourselves and our surroundings to fall freely—in other words, if we yield completely to the pull of gravity—everything about us will be falling at the same speed, and will appear to be floating along with us completely without weight/'

"What a peculiar sensation that must be!" the headmaster commented. "Has anyone ever had that experience?"

"Oh, yes, quite often. If pilots of high-speed aircraft rapidly close the engine throttles at the termination of a steep climb, they can experience up to twenty seconds of zero-gravity effects."

"Is it unpleasant?" Chris asked.

"No. They say that after the first feeling of insecurity— which results in reflex action that makes them clutch at something—they quickly get used to it and feel a sense of relief and relaxation. They're able to perform simple mechanical operations, but the ability to do easy mental exercises varies greatly. Loose articles like gloves and maps float around the pilot in a most distracting way. No one has said he has felt any sickness. In fact most of them enjoy the sensation and are very willing to repeat it."

"How did the white mice get on, sir?"

"Quite all right. They were in free fall for a longer period—two or three minutes, in fact—and no ill effects were detected. And monkeys that have been sent up in rockets have landed quite safely after their venture into the fringes of space. They were anesthetized before the flight so they wouldn't damage the various recording instruments attached to them. Most of the

bodily functions, such as breathing and circulation of the blood, are muscular, so they go on quite independent of gravity."

"I suppose the next logical step will be to send someone

up in a rocket," Chris ventured. "How long do you think that will be, Sir George?"

Benson hesitated.

"I'm hoping it will be very soon now," he said, and seemed to be strangely embarrassed.

"It will be dangerous, wont it, sir?"

"Yes, I'm afraid so," Benson agreed. "Though naturally every foreseeable contingency would be provided for. Apart from the first monkey, which died through heat prostration because of the delay in finding and recovering his container in the Mexican desert, none of the others has been injured in any way."

There followed a pause—a long one. Chris became aware of the atmosphere of strain and of the tense expressions of the two men.

The scientist seemed to take a deep breath. "Chris," he said, "will you go up in a rocket?"

©

hapter Two

Would he go up in a rocket?

For a moment Chris failed to appreciate the import of the question. Then it burst on him like a blow. The two men saw his face go deathly pale. Slowly the blood came back, and he flushed deeply. He felt his heart thumping. Surely this is a joke, he told himself. But jokes like this were not perpetrated in the headmaster's study by one of the foremost scientists in the country. 16

"Go up in a rocket?" he heard himself ask in a voice not his own. "Why me?"

The headmaster cleared his throat awkwardly.

"May I make my own position in this affair quite clear?" He spoke directly to Chris, and a little ponderously. "I have only consented to this interview for reasons given to me by Sir George Benson, which he will be explaining to you. I have insisted, however, that in view of the gravity of the decision, you are not to give an answer without much thought and advice. The enthusiasm of youth has frequently led to a choice that has been regretted later. Restrain any impulse you may have, my boy, to regard this as an adventure to be undertaken lightly—or heroically. Now I know that Sir George has more to say."

Chris, his pulse still a little faster than normal, had now realized that he, a boy about to leave school, had been asked if he would be the first human being to be launched in a rocket. What was all this about? Surely it couldn't have anything to do with his talk with the scientist a few days before? A thousand questions crowded into his mind.

"I agree emphatically," Sir George said seriously, "that in view of the considerable element of danger you must make your choice freely. Only a few people besides ourselves know of this invitation. If you decide not to take this very considerable risk, no one will know besides these few, and certainly none of us will blame you. I tell you frankly that if I were in your position, I doubt whether I could find sufficient courage to go. So let your mind be completely at rest on that score."

There were many questions that Chris wanted to ask, but again he voiced the one that was uppermost in his mind. "Why me?"

"I'll tell you," the scientist replied, "why you, Christopher Godfrey, have been asked to be the first traveler into space. Please don't mind my saying this, but one of the main rea-

sons is your size. That, together with your scientific qualifications and interest in rocketry, prompted me to put your name forward for this test."

"Have you actually discussed me with anyone?" Chris asked.

"Perhaps 111 be a little more explicit. From what I have already said, you know that no human being has yet been projected in a rocket. This was to be the next step, but we hadn't planned to take it for another year or two. Then something that I am not at liberty to disclose happened that makes it imperative for us to jump ahead and experiment with a human being immediately. Yesterday morning there was a meeting of the Cabinet, which expressly authorized this proceeding.

"The rockets we're using at the moment are not really big enough to carry a man. We had planned to have bigger ones ready for this purpose in a few years. Now we simply can't wait any longer. I was asked, or rather instructed, to arrange for a test firing to take place with a passenger, not later than September thirtieth—which is less than ten weeks ahead. It's impossible to build a large rocket in the time. The problem seemed insurmountable until I thought of you."

"I understood you to say that the rockets now being used can carry over six hundredweights," the headmaster said. "Surely, then, it would be quite easy to carry an adult?"

"It isn't the carrying capacity of the projectile that is the limiting factor, but its diameter," replied Benson. "In order to survive the acceleration during take-off, it will be necessary for the occupant to lie on a specially designed seat called a contour couch, at right angles to the path of flight. In other words, he must lie across the rocket. Now the diameter of the rockets we are using, and must use for this purpose, is fifty-eight inches. This is reduced by six inches by the casing and insulation. That leaves an inside diameter of 18

four feet and four inches, across which the passenger must lie."

"Godfrey's small, but I'm afraid he's taller than that," put in Mr. Berry. "How tall are you?" he asked Chris.

"Four feet ten and a half inches," Chris answered.

"That's all right," Benson said quickly. "You see, the passenger will not lie absolutely flat. The head and knees will be slightly raised. I think we shall find that this young man could be accommodated with about an inch to spare— if he decided to take on the assignment."

"Now that Sir George has outlined the situation, I'm sure you would like to think this matter over very carefully before any further steps are taken," the headmaster said. "If you decide to accept this invitation, then Sir George will have to see your aunt who is your legal guardian. I, myself, can offer you no advice. It is plain that there is a large element of danger involved, but the matter is apparently of the greatest national importance."

Sir George nodded. "Yes," he said, "it is most certainly that. Another reason why you must think carefully before deciding is that, if you agree, you will have to undergo a very concentrated course of instruction, and it wouldn't be possible to find and train a substitute if you should back out. Oh, there's another thing. If all goes well, you'll be back in England well before the university term begins."

The scientist and the headmaster stood up—the interview was at an end. Also rising to his feet, Chris experienced a new tumult of emotions. Now he would have to make his decision. As the three walked towards the door, Benson rested his hand lightly on the boy's shoulder.

"I'm staying overnight with Mr. Berry, so perhaps you'll come along at about ten o'clock in the morning," he said. "Remember, not a whisper—and a perfectly free choice."

Chris stopped and turned toward him.

"I can tell you now, sir," he cried. "I shall go!"

"Stop!" Mr. Berry interposed. "That's just what we don't want you to do. You mustn't reply while you're still in the throes of any emotion that Sir George's proposition has stirred up. No grand heroic decision, please. I'm sure he won't accept an answer one way or the other until tomorrow morning. Isn't that so, Benson?"

"Absolutely," came the reply. "Run along now, Chris, and think about it very carefully."

"And pray," added the headmaster.

Chris shook hands with the two men, then walked down the corridors of the empty school to the door.

It was not yet quarter to ten the following morning when Chris, rather pale, came through the school gates. Not wanting to present himself at the headmaster's study quite so early, he walked around the classroom buildings and across to the athletic field. Then, with a deliberate step, he strode toward the main building and the headmaster's study. Five minutes to ten!

From behind the closed door came a low murmur of voices. The headmaster and Sir George were early, too. Chris tapped on the door firmly.

At once the conversation inside stopped. The door opened and Mr. Berry extended his hand.

"Good morning, Godfrey," he said. "Sir George is here. Come inside."

Gravely the scientist shook hands with the youth. All three remained standing.

"I take it you have come to your decision, Christopher?" Sir George asked quietly.

"Yes, sir. I have thought a great deal about it, as you told me to do. I am willing to go."

There was a heavy silence in the study, and an air of tension. Chris noted a little vein throbbing in Sir George's temple just below the graying hair. The seconds ticked on. 20

At last Benson spoke. "I wont offend you by asking if you are really certain about this, and if you have thought it over deeply. You obviously have. I believe you to be a clear-sighted young man who would weigh the pros and cons very carefully. I accept your decision."

Mr. Berry seemed the most moved of the three. His voice shook a little as he spoke.

"Knowing Godfrey, I cannot say I am surprised that he has agreed to your proposal, Sir George. He is a levelheaded lad, and I am sure he wont withdraw at a later stage. I congratulate you, my boy, on your courage and patriotism."

Now the scientist spoke. "Nothing has been said to you yet, Chris, about what I was empowered to offer you if you agreed to cooperate. I wanted you to choose this—if you did choose it—on purely disinterested grounds. This you have done. Now I am glad to tell you that you will be given a grant of one thousand pounds immediately, and in addition the Ministry will be responsible for all your education up to degree level. When you have obtained your degree, you will be offered a post as a junior scientific officer at an excellent starting salary. In the event of your being injured as a result of this experiment, a pension at the rate of ten pounds a week would be paid to you; or to your next of kin if anything even more unfortunate should happen."

"But, sir, I didn't know there was any money involved," protested the bewildered Chris.

"We didn't want to buy you," answered the scientist. "Now that you've chosen freely, you should know of the financial provisions that will be made for you."

"I can't grasp it," Chris faltered. "I didn't expect to be paid for it. I don't know what to say."

"Then say nothing, my boy. Now to work! You're under twenty-one and so it's necessary to have not only your own

written consent, but also that of your guardian. How soon may I see her? This morning?"

"Mrs. Ingall is a busy woman, you'll find," said Mr. Berry. "How soon do you think she would be free to see Sir George?"

"It's usually fairly quiet in the shop at about eleven," Chris answered. "If we go there now I'm sure we can see her."

It was almost lunchtime when the interview with Chris* aunt ended. As soon as she had made her decision—and she hesitated for a long time—Mrs. Ingall demonstrated her practical outlook by questioning Sir George Benson closely about when and where Chris was going and what clothes he would need.

Before leaving, Sir George produced three copies of a document that he

signed, together with Chris and his aunt. Mr. Berry witnessed their signatures. This document stated that Chris was willing to undertake "certain tasks as specified by H.M. Minister of Supply," and that Mrs. Ingall, his legal guardian, gave her consent. The financial provisions already explained by Sir George were put in writing, and one copy was left with Mrs. Ingall. Then the two men left.

Shortly after lunch Mrs. Ingall put up a notice that she would be closed on Saturday afternoon. At the suggestion of the scientist, she told a few of her friends that Christopher was going away on a holiday for a few weeks and that Saturday afternoon was the only chance she would have to do any shopping for him.

That weekend very little reference was made to Chris* decision by either of them, but Chris knew that both he and his aunt awaited the parting with heavy hearts. He caught her looking at him intently, as if to soak up his image in her mind.

Sunday was very difficult. Twice Christopher heard his 22

aunt weeping in her bedroom. He knew that she would never forgive him if he intruded on her, so he tiptoed despondently away. To his face, his aunt was full of bustle, even forcing an occasional smile, and Chris responded by adopting a light-hearted attitude. On Sunday they went to church together as usual. Afterward Mrs. Ingall repacked her nephew's bags for the sixth time. That evening they went to bed early. Next morning both knew that the other had slept badly, but neither made any comment.

While his aunt prepared breakfast, Chris wandered around the house fingering familiar ornaments, glancing through books, touching the furniture, and generally bidding a silent farewell to the only home he had known for many years. He refused to let himself consider the possibility that he might never see it again.

At about eight-thirty Mr. Berry, the headmaster, came. His arrival relieved the growing strain that was becoming apparent as the time for Chris' departure drew near. The headmaster had little to say, but the silent pressure of his hand conveyed more to Chris than a thousand words. Precisely at eight forty-five another knock announced the arrival of a smiling corporal who said he had been instructed to collect Mr. Godfrey.

Discreetly, Mr. Berry wandered into the shop, leaving Chris and his aunt alone to say good-by.

Before nine o'clock, as the car slid away from the door, Chris glimpsed his aunt and Mr .Berry standing quietly together looking in his direction. Then a right-hand turn unceremoniously terminated the silent leave-taking, and Chris settled down beside the driver, his great adventure ahead.

(0

hapter Three

Before long the friendly corporal began to talk to his passenger.

"I don't know what's going on," he said, "but I was told to look after you extra special. Bit young for a V.I.P., aren't your

Chris liked the driver's cheerful grin, and the depression of his farewells was soon over.

"I suppose I am," he replied, "though perhaps I'm a little older than you'd think. I was seventeen in May."

"Bit of a shorty, aren't you? Sorry. No offense meant."

"That's all right," Chris assured the corporal. "I'm used to it."

Soon they were chatting together familiarly. The serviceman told Chris about life in the army and the notable V.I.P.s he had driven. Chris replied by talking about his school and his life at Norton. He had to watch what he was saying lest he refer in any way to the purpose for which he was going to London. Chris found that the corporal had been told that he was a relative of one of the officers and would soon be going abroad with him.

Leaving the car in the court of a large new brick building in Theobalds Road, they entered the swinging doors and reported to the commissionaire seated behind his little counter. Each signed the visitors' book while the commissionaire talked with someone on the telephone, then informed them that they were to proceed to Room 696. Another commissionaire, appearing from some mysterious cubbyhole, was requested to conduct Chris and the airman to 24

Room 696. A short walk down a corridor, a trip in an elevator, and a rather longer walk brought them to the room. After knocking, all three entered what was obviously a waiting room. A member of the Women's Royal Air Force seated at a desk replied to the corporal's grin with a frosty stare. Then she announced to a desk microphone that Mr. Godfrey had arrived. A few seconds later Chris was shaking hands with Sir George Benson, who had emerged from an inner door followed by an Air Force officer.

"Wing Commander Greatrex—Christopher Godfrey," the scientist introduced them. The Wing Commander cordially shook hands with Chris, then remained behind to give instructions to the corporal while Chris followed Benson into the inner room. This was comfortably furnished with a table, chairs, and in one corner a huge safe and beside it several steel filing cabinets. Sir George and Chris sat down and in a very short time the Wing Commander joined them.

"So this is our young volunteer!" he said after he had carefully closed the door. A friendly smile accompanied the keen look with which he appraised the boy. In his turn, Chris saw a pair of light-blue eyes above a handlebar mustache of the type made famous by cartoonists. The wings and medal ribbons on the officer's tunic showed Chris that here was an ex-Battle-of-Britain pilot.

"You will be seeing a great deal of Wing Commander Greatrex during the next few weeks," Sir George told Chris. "I will spend as much time as I can with you, but it is Greatrex who will have to be your guide, philosopher, and friend. I can assure you that he's not nearly so fearsome as he looks."

"Thanks for the compliment." The owner of the mustache grinned as he settled into a chair.

"Now to serious business," said Sir George. "As you know, a great deal has to be accomplished by a certain definite date—the thirtieth of September. During the next few weeks,

young man, you're going to be extremely busy. Greatrex and I spent a couple of hours this morning trying to draw up a program that will fit in everything by the day of takeoff— 'T Day' we're starting to call it. I'm afraid we have a pretty tight schedule before us and the slightest deviation

from our plans may throw everything out of gear. Will you listen, Christopher, very carefully to these instructions and the program for the rest of today.

"First and foremost, while you are still in London, you will eat and sleep in this building. So will Greatrex and myself. There is a small dining room on the first floor and sleeping quarters are at the top. If you can bear the sight of him, the Wing Commander must be your constant companion for security reasons."

Chris looked a little puzzled, and the scientist hastened to explain.

"The reason we have to do this is not because we expect you to run away and reveal our plans to an enemy, but to protect you from any outside interference. You see, if the eastern European countries get wind of what we're planning to do, they'll go to any lengths to prevent it. We don't want any accidents happening to you, our key man. However, you'll hear more about this later on. This afternoon you'll get a very thorough medical check-up, followed by a few routine injections that we insist on everyone's having before leaving for Woomera. Nothing painful, but perhaps a little stiffness afterward. Any questions, Chris?"

"Plenty, Sir George, though I expect I'll get the answers to most of them as time goes on. It looks, then, as if I'm to be a prisoner for a bit?"

It was Greatrex who replied. "In a way, yes. We hope it

won't be too unpleasant for you. Believe me, young feller-

me-lad, if you knew as much about foreign agents and their

methods as I do, you'd be afraid to let anyone in your

charge out of your sight. But what about lunch, Benny? I'm starving."

Benson looked at his watch and found that it was certainly lunch time. He rose at once and held the door open for the other two to precede him. Then he locked the door and followed them, pausing only to tell the airwoman to order a car to be there in an hour.

Chris thoroughly enjoyed his lunch. It was served in a small room with

only six tables in it, by two more members of the Women's Royal Air Force. About a dozen people were lunching. Most of them glanced curiously at the small youth as they greeted Sir George or the Wing Commander. After an excellent lunch the two men drank their coffees and smoked, while Chris looked around the room and quietly studied the other occupants. Two of them were R.A.F. officers and there were two in army uniform. The rest were civilians.

At last, with another glance at his watch, Benson rose and led them back to his office. A different girl was on duty in the reception room. She informed the scientist that the car was waiting in the court.

"Gad! You had a tuck-in, Chris," laughed the Wing Commander as they closed the office door. "Don't eat like that all the time, or you'll get too fat to fit the rocket."

Chris smiled back. "Sorry, sir. It was jolly good and I hadn't had much breakfast. I wish I could grow a bit, sir, but I'll postpone it until after T-day."

"When you two have finished—" broke in Sir George. "Chris, the Wingco will be taking you to the R.A.F. Medical Center in Devonshire Street. You'll be back here for tea, and after your injections I expect you'll want to go to bed early. There are plenty of books and magazines. I'll be seeing you at breakfast time tomorrow. You'll have a very full day, so try to get as much sleep as possible. Till tomorrow, then!"

Greatrex led Chris to the waiting car. It was neither the same car nor the same driver that Chris had seen that morning. The drive to Devonshire Street did not take long. A sergeant saluted the pair and conducted them to the examination room. Here there were three R.A.F. medical officers and a civilian. Soon Chris was in the middle of the most thorough medical examination he had ever experienced. Each of the three service doctors seemed to specialize in some certain part of anatomy. The civilian proceeded to take an enormous number of his measurements, which were carefully noted.

Although they showed him every consideration, Chris was glad when at last he escaped. After a brief respite while he put on his clothes again, he submitted to his injections. Wing Commander Greatrex had been an

interested spectator throughout, speaking only to pass uncomplimentary remarks to his medical colleagues at suitable intervals.

It was with considerable relief that Chris, his arms beginning to get a little sore, put on his jacket and prepared to go back to headquarters with his friend. The doctors promised to send their report to Sir George Benson first thing in the morning.

"What did that civilian chap want all those measurements for?" Chris asked the Wing Commander. "He was worse than a tailor measuring for a suit."

Chris was surprised when the officer burst into a roar of laughter. "You don't know how near you are, young feller-me-lad," he said at last. "But you'll be hearing all about it later on."

At headquarters they went up to the top floor, which was laid out as a number of self-contained suites. The one to which Greatrex led Chris consisted of two bedrooms, a sitting room and a bathroom. Chris' bags had already been placed in his room, and it was with a sigh of relief that he sank into one of the two easy chairs in the sitting room. His

arm was beginning to get really painful, and he was grateful for the Wing Commander's assistance in removing his jacket.

That evening, Chris was quite content to sit with Great-rex for a couple of hours, reading and listening to the radio. It was the Wingco who suggested that perhaps he would be more comfortable in bed. Chris agreed, and was soon climbing rather stiffly between the sheets. He didn't sleep at once. For some time he heard Greatrex moving quietly about. The radio had been turned down, but nothing could mute the low rumble of the traffic in Theobalds Road. This, Chris thought as he tossed restlessly, was his first night away from home. What would Aunt Mary be doing at that moment?

"Wakey, wakey," the Wing Commander called as he drew back the curtains. Chris sat up in bed and wished the officer good morning. His arm was still sore but not too bad. Soon he joined his companion, and in a few minutes Sir George also came in. After inquiries about his injections, the three went down to the dining room for breakfast.

Toward the end of the meal, a bespectacled man from one of the other

tables came across at a sign from Benson.

"Christopher, I want you to meet Dr. Saunders," he said. "He's one of our foremost astronomers. Doc, this is Christopher Godfrey. I believe you already know this Air Force character."

Hands were shaken all around, and the doctor chatted to Benson and Greatrex for a few minutes. As he turned to leave, he gave a friendly smile to Chris and said he would be seeing him again in about half an hour. When the meal was over, Greatrex took Chris back up to their sitting room where they were to await word from Benson. During their absence the morning papers had been delivered to the suite and the bedrooms tidied up. Chris found it difficult to settle

down to read the news, and was pleased to go down to Benson's office when the telephone call came through.

Dr. Saunders and Sir George were talking as he went in, but both immediately broke off their conversation to turn to Chris. The scientist invited everyone to be seated while he glanced through some papers on his table.

"You've passed your medical test all right, Christopher," he said. "Although you're not very big, you seem to be a perfectly healthy young animal and well able to stand up to what we require of you. That being so, this morning's session is going to be devoted to telling you more fully what we propose, and why. Saunders, here, will kick off, and I'll try to fill in any details. Floor's yours, Doc."

Chris' arm was feeling a good deal better. The informal atmosphere did wonders in putting him at ease, for now that he was really getting down to brass tacks he was feeling more than a little shaky.

The doctor cleared his throat, pulled a few papers out of his brief case, then looked intently at Chris. There was silence for a few moments. Then the doctor spoke.

"Christopher, do you know what this is?" he asked, and he placed a large photograph in front of the boy. Chris studied it for a second or two.

"It's a photograph of the moon," Chris said.

"Quite right. It was taken when the moon was at the full about a year ago. Are you familiar with any of the lunar features?"

"I know a few of the names, but what exactly they refer to I don't know."

"Right. You know, I take it, that the surface of the moon consists of sharp mountain ridges, circular formations we call craters, and large flat areas at first thought to be seas and so called maria'? There are, of course, many other fascinating features—the clefts, the mysterious light-colored rays radiating from several of the craters, and so on. Now,

this very prominent crater is Tycho. Its rays spread out for hundreds of miles in straight lines. Here is Aristarchus; this is Plato, this Copernicus, this Kepler. The dark area you see here is the Mare Serenitatis; this, the Mare Imbrium. Notice the mountain ranges, named after some on Earth. This range here is called the Appennines; this, the Caucasus. All these formations on the moon are mapped and named, and it's probably true to say that lunar maps are far more detailed than some of certain parts of our Earth. Of course, we can only see just over half of our satellite's surface, and this has been the subject of concentrated study from time immemorial;

Chris was looking at the photograph with great interest. He had seen plates in popular astronomy books, but he had never before had the opportunity to study such a clear reproduction. Gradually, however, a puzzled frown gathered on his eager face. Then in a flash it cleared and he looked up at the astronomer.

"You've the photograph upside down, haven't you, Doctor?" he asked.

"Good boy," beamed Saunders. "Yes, the photograph is, as you say, upside down compared with the way you would see the moon with the naked eye or through binoculars. This is the view that is seen through a telescope, and so is the one usually used by astronomers."

"Christopher, I want you to study this moon map very carefully," Sir George Benson said. "It's absolutely essential for our purposes that you should get to know it as well as you do the map of Great Britain. Also you must familiarize yourself with it in the position of this photograph, for it is through a telescope that you'll be watching it when the great moment comes."

Doctor Saunders produced a transparent copy of the photograph on which had been printed the names of the main features of the lunar landscape. By superimposing it

on the other photograph, it was possible to identify many of the craters, mountains, and seas by name. He passed both over to Chris for further study. Then he reached for another print, which he placed in the center of the table.

"Now this is a picture of the area around the crater Plato, but on a much enlarged scale. The moon was not at the full, so the sunlight's coming more from one side. Can you see the shadows inside the crater's rim? Look at these two mountains jutting straight out of the surrounding plain. This one, near Plato, is called Pico; it's about eighty-five hundred feet high. Its height can be measured by the length and angle of its shadow. This one, a little farther away, is called Piton. The photograph was taken about six months ago. Now I want to show you one that was taken only a fortnight ago, and I want you to compare the two."

Chris' excitement mounted as the doctor took still another print from his case. This, too, was of the area around Plato, and taken as nearly as possible under the same lighting conditions as the one they had just been examining. Saunders placed the two prints side by side, and Chris studied them intently. He was on the point of confessing that he could see no difference between them when a slight dissimilarity in the photographs of Pico took his eye. He bent to look more closely. Yes, there was certainly a difference here. He glanced up to discover that the three men had been watching him with interest. He flushed slightly.

"I think you've hit on it," conceded the astronomer. "There's a difference in the appearance of Pico, isn't there? And it's precisely that that is causing our government and the governments of our allies so much concern. Perhaps I'd better explain further.

"About six weeks ago one of our best amateur astronomers reported that he fancied he had detected some alteration in the outline of Pico. Now, although the moon is generally regarded as dead and changeless, various changes are noted

from time to time, and they're a constant source of interest to observers. As soon as the report reached the Lunar Section of the Royal Astronomical Society, many more and larger telescopes were trained on Pico. At once it became evident that something had happened in the shadow of that isolated little mountain, and owing to its unusual nature it was reported to the government. When the next favorable opportunity came, about three weeks ago, a whole forest of instruments was directed at this spot. Again an alteration was noted. Indeed, a change had taken place since the first reports were made.

"As far as we can make out from the best possible photographs and from visual observation, the change in the appearance of Pico is caused by something at its base. It looks very much like a large meteorite partly buried, except that its outline is smooth—almost like a dome.

"Now this object is either a natural one—or an artificial one. And it's imperative that we find out pretty quickly which. We've never before seen anything like this on the lunar surface, but we mustn't, of course, let that lead us to a hasty conclusion. There may well be all kinds of strange formations and happenings on the other face of our satellite, which is never seen by man, though I doubt whether things around on that side are much different from conditions on the face we see. Nature is constantly springing surprises on us, and this may well be one of her old tricks. On the other hand, it may not. Perhaps nature has nothing at all to do with it, and the whole thing is artificial."

"Do you mean that there are living creatures on the moon after all?" Chris burst out in astonishment. "I've always understood that conditions there made life impossible."

"That is so, and we've no reason to think otherwise. No. If this is an unnatural structure, it hasn't been made by any inhabitants of the moon."

"Then do you mean that someone—or something—from another planet has reached it?"

"That's hardly likely. Remember that the only planet on which we are fairly certain there's some form of life is Mars, and that only in its very lowest form, possibly like our moss or lichens. The possibility of an intruder from outside our solar system is remote in the extreme."

"Then if it's artificial, who or what has done it?"

"That we don't know yet—for certain. However, there is this very significant fact to be borne in mind: Russia and all the countries under her control have kept extremely quiet about this situation that has excited so many Western astronomers. Yet we know that there are many fine observatories with first-class instruments beyond the Iron Curtain. The first mention of it in the Soviet press was only a week ago, when the whole thing was played down as being some perfectly ordinary occurrence. It was even claimed that a Russian astronomer had seen the actual impact of the meteor that was the alleged cause of all the fuss.

"We don't accept that. In the first place, no one in the West saw this 'impact.' The surface of the new feature appears too smooth and too regular to be natural. Finally, why didn't the Russians rush into print six weeks ago? There's no doubt they saw the thing just as soon as we did."

"So you think the Communists are in some way responsible for this new shape against Pico?" Chris asked.

"We're not sure. That's what we must find out."

"But I've always understood that interplanetary flight's still a long way off?"

"It is, so far as we in the West know. But what we don't know is how far the Russians have progressed. The limiting factor, or rather the main obstacle, is the present inefficiency of the rocket fuel. We know of nothing yet that could reach the moon except a multi-stage rocket of enormous size, costing a fantastic amount. Maybe the Russians have discovered 34

something far more powerful than anything we've tried, or maybe they've perfected an atomic-fuel rocket. You'll remember they talked of a new fuel' when they launched Sputnick II. We do know that by various means they obtained the services of a considerable number of German rocket scientists, and that they've been carrying on an extensive research program somewhere at the back of beyond. Unfortunately, too, a few Western scientists have gone over to them. And so it's very difficult to guess at the possible progress that the Russian rocket program has made."

"But why should the Soviets want to get to the moon? To steal a march on

us in the field of science?"

"Well, of course, their motives may be purely scientific, but we think it more likely that they've some military purpose in mind." ' 1 ^ 10jL5J_2^

"But how? I've read that even an artificial satellite, only a few hundred miles above the earth, can't have any military value. What has anyone to fear from something nearly a quarter of a million miles away?"

"We don't know," Sir George replied. "The belief that a satellite would be harmless has been based on the assumption of near parity of the opposing powers. This takes it for granted that if one side had the technique to construct a satellite, the other would have the means to shoot it like a sitting duck. If, however, there's a great disparity between the opponents—as there would be if the Russians have reached the moon—then there may be an entirely different story. We can hazard a guess at several possibilities that such a completely unopposed achievement might open for a power bent on aggression."

"All this is pure speculation at the moment, but you can see now how important it is for us to clear up the enigma at once," the doctor observed.

"Can't the very large telescopes clear it up?" Chris asked.

"Unfortunately, no. You see, there's a limit to the re-

solving power of even the best instruments. Even the two-hundred-inch telescope at Mount Palomar, the largest in the world, cant help us. The earth's atmosphere prevents the taking of an absolutely clear picture. That's why the best photographs have been taken by observatories situated on high mountains, clear of the lower layers of dusty air. But there's always a condition called 'turbulence* to contend with. Very rarely are 'seeing' conditions ideal."

"So, Christopher, you've an idea now of what we want you to do—to go in the rocket and to have a look at Pico from beyond the earth's atmosphere," Benson explained. "By doing just that, the Western world will know whether the dome beside the moon mountain is the work of nature or the work of the Russians."

Just then one of the telephones on the table rang. The scientist picked it up.

"Benson speaking. Yes. Who? Put him through at once," he said. There was a worried frown on his face.

©

hapter Four

Sm George Benson spoke briefly into the telephone. Then, turning to the others, he asked if they would excuse him as the call was private. Greatrex, Saunders, and Chris rose and went to the door.

"Fine," the Wing Commander said, "just the opportunity for a cigarette and coffee. Come on, you two."

He led the way to the small dining room, leaving the scientist to carry on with his telephone call. But hardly had 38

the three sat down to their coffee when Greatrex was called to the phone. It was Benson.

"Whiskers, I want you to come here at once," he said. "Let Saunders look after young Chris for a bit. I want to talk to you alone. Tell them I'll let them know when we can resume our huddle."

Greatrex soon joined his colleague. "What's the trouble Benny?"

"Something happened that I don't like. That call was from a Mr. Berry, headmaster of my old school—and Chris' school —who is in my confidence about this job. He says young Godfrey's aunt has had a mysterious caller who has been trying to pump her about her nephew's whereabouts; and about whether he came away with me."

"Hmm! Looks as if they're on the job already. Any possibility of a false alarm?"

"That's possible, but we mustn't take any risks. I want you to act on the assumption that the other side knows that we are planning to do something with the boy. I thought I'd tell you about this on your own, for we mustn't overlook the possibility that they may try and queer us by getting at young Christopher. That part of it's up to you, Whiskers."

"I'll be on my toes. Now tell me all you can."

Benson repeated the headmaster's story as it had come from Mrs. Ingall, and gave Greatrex her description of the visitor. The Wing Commander failed to recognize any likely suspects from his word picture, but agreed with Benson that they couldn't afford to take any chances.

"I'll see to things," he said. "He shan't be left for a second, poor kid. I don't know how much you feel we ought to tell him, but he's a plucky youngster, and it won't do any harm to let him know the reasons for the extra precautions."

"That's up to you. Tell him if you think it will help. Now do you think any action should be taken at the Norton end?"

Greatrex thought for a moment.

"I wonder how Mrs. Ingall would welcome a new niece or second cousin who came to stay with her? There's a very good woman in our Security Branch. I think it might be as well to let her stay with Mrs. Ingall for the next few weeks."

"Good, we'll fix that up. Ill telephone Mr. Berry and ask him to break it to Christopher's aunt. I'm sure that after last night she'll be only too pleased to have a companion with her in the house. Perhaps we'd better call off the rest of this morning's session with the youngster. It'll give us a chance to make our arrangements."

"Fair enough. Doc Saunders can look after Chris till lunch time. I'll step along and let them know."

As Greatrex went out the scientist called Mr. Berry at Norton. The headmaster was soon agreeing to Benson's proposal and promised to visit Mrs. Ingall immediately after lunch to tell her that the "relative" would probably arrive that evening.

Chris and Dr. Saunders waited, wondering what had happened. Then the Wing Commander returned and announced, "Session over for this morning, but I'd like you both to come up to our sitting room."

"Last night," he told Chris after they reached the room, "your aunt had a

caller who asked a lot of questions. Very wisely she contacted Mr. Berry, who, this morning, telephoned Sir George. Now there may be nothing in this, but on the other hand, there may be. So we propose to put strict security arrangements into operation at once."

"I hope Aunt Mary isn't going to be worried," Chris said, a little troubled. "As for myself, I don't mind what you do, but I hope I'm not going to cause trouble for her."

"We're looking after that angle, and, if your aunt is agreeable, we're sending down a reliable woman officer from our

Security Branch who'll stay with her, as her niece or something, for a few weeks."

"Oh, good! IVe been worried about her being lonely," Chris said. "I hope she agrees."

"Mr. Berry is being asked to go along and persuade her," Greatrex explained. "Now, if you'll excuse me, IVe a spot of work to do before lunch. Perhaps, Chris, you might improve the shining hour by mugging up a bit of lunar geography with the help of our learned friend here."

"Anything to oblige," sighed Saunders. "Come on, Christopher."

Greatrex left them poring over the photographs, with the astronomer explaining the various lunar formations to the eager boy. For the next hour or so Chris listened to a fascinating description of probable conditions on the moon's surface, various theories about the origin of the craters, the enigmatic rays, the straight wall, the mysterious mists that appear inside some of the craters. All the time he was absorbing a picture of the moon and naming with confidence the mountains, seas, and major craters.

Sir George Benson interrupted. "Are you two coming to lunch or are you staying there all day? It's nearly one thirty."

Chris and Saunders grinned a little sheepishly as they followed the scientist. Chris did full justice to the excellent food set before him.

"Hmm! Put on specially for you, young Chris," Greatrex grumbled. "We don't usually fare as well as this."

"Must keep him fit for his trip," observed Benson. "Oh, Chris, I'd like you to have a spell in the gym each day—just to keep you on your toes. Whiskers will keep you company."

"Oh Lord! I haven't done any P.T. for years," moaned the Wing Commander. "The sacrifices one's called on to make for one's country!"

When lunch was over Chris went with the three men to Sir George's room again.

"This afternoon," Benson began, "I'd like to complete the rough outline of the job we're asking you to do. The details will be filled in later. Now for a bit of the why' and the wherefor.'

"Even if we now knew for certain that the dome had been made by the Russians it would still be necessary to carry out this program. You see, it would be essential for us to discover as much as possible about the nature and construction of the dome. We want to know what it's made of, and if possible the use they propose to make of it. Apart from visual and photographic observation, we must have a spectroscopic examination, which should give us a great deal of information about it."

"You can find out the kind of elements present from lines on the spectroscopic screen, can't you?" asked Chris.

It was now Saunders who replied.

"Yes. It isn't easy, though, for the moon, as you know, is not a source of light itself. The illumination we get from it is reflected light from the sun. So it has all the characteristic lines of direct sunlight. It requires very delicate instruments to detect differences between sunlight and moonlight that can be attributed solely to the moon. But infrared and ultraviolet spectroscopy have helped to increase the usefulness of this method of investigation."

"Exactly what have I got to do in the rocket?"

"Very briefly, you'll have to direct our telescope and other instruments onto Pico," Sir George answered. "You see, it's possible, though fairly difficult, to construct something that will point automatically at the moon. Something of that sort enables some of our guided missiles to 'home' on

their targets. However, it's not possible to direct our instruments on one particular part of the moon—and this is where you come 40

in. For this job we haven't yet discovered any substitute for a human intelligence."

'Will it be very difficult?"

"I don't think so. As we don't quite know how your reactions will be affected by the acceleration, then the free fall, we're planning to make the task as simple as possible. All you'll have to do is to direct the telescope onto Pico. Everything else will be done by telemetry. Other instruments will be aligned to the 'scope,' and all the readings will be transmitted by radio back to base. There they'll be reproduced on complementary instruments and the readings observed by a large staff. At the same time a photographic record of all readings will be made so that later they can be studied in more detail and analyzed. A television lens will be built into the telescope, so that we on earth will be able to peer through it with you, and we'll see the same view you're watching."

"It all sounds easy enough," Chris said.

"Of course it won't be quite so simple as that. We don't know what difficulty you'll have in operating the 'scope' under such artificial conditions. Then there'll be the G-suit that you'll be wearing."

"The what?"

Greatrex grinned. "That's what you were measured for yesterday. One young gent's natty G-suit."

"It's a suit specially designed to assist the human body to withstand the strains and stresses to which it will be subject during rocket flight," Benson explained. "Pilots of highspeed aircraft face almost the same problems, and the research for a space suit began with the investigation into the physiological problems of supersonic flight. The answer is in what we now call the G-suit. You'll be seeing one tomorrow, and probably wearing one very soon."

"I've arranged to take Chris down to Tolworth in the

morning if that fits in with your program," the Wing Commander said.

"Yes. O.K. We must push on with that most essential article as fast as we can. Chris will need to wear it as much as possible to get accustomed to it."

That seemed to conclude the afternoon session. Chris and the long-suffering Greatrex spent about an hour in the huge building's gymnasium under the eyes of the resident instructor. The man was far more tired than the boy at the end of it, and both were glad to spend a quiet and relaxed evening in the sitting room.

©

hapter Five

The next morning, Wednesday, August first, Chris and the Wing Commander had their spell in the gym before breakfast. Chris maintained his growing reputation as a good eater at the meal that followed.

"We shan't be seeing much of Sir George today," Greatrex remarked as they finished eating. "He's busy here, and we're going to a place called Tolworth, down in Surrey."

"What's on at Tolworth?"

"Don't you remember? It was arranged yesterday that we'd go there this morning. Have you forgotten your new suit?"

"Oh," Chris laughed, "the G-suit! Yes, I had forgotten that I'm to visit my tailor this morning. I'm looking forward to trying it on."

"You won't try it on today, my lad. It isn't made as quickly 42

as that. You were only measured for it on Monday afternoon and it'll be next Monday before it's finished, though the firm that is doing the job is working on it day and night. You see, it's an important and complicated piece of apparatus. You'll see a G-suit today, but not the one you'll wear yourself."

Before they set off in the Air Force car, a messenger brought a note for Chris from Sir George. It said merely that a woman officer, Miss Darke,

was safely installed with his Aunt Mary and that no further incident had been reported.

The car took them to the office of a famous company well known for the manufacture of diving suits. With the advent of high-speed and high-altitude flight had come the necessity for protecting the human body against the resultant conditions. It was logical for this company, with its experience of similar problems in a different field, to be the main research agency.

Greatrex led Chris through the swinging doors into the palatial reception hall where a sergeant commissionaire greeted them from his reception table. While the Wing Commander established contact with the firm's chief technical officer, Chris gazed around the hall. There was plenty to interest him. At intervals along the walls were figures attired in various types of diving suits manufactured there, from the aqualung to the armored monster for the depths. Also there were lifelike models wearing the different types of breathing apparatus used by mine rescue squads, firemen, and others.

Chris had wandered barely halfway around these fascinating exhibits when Greatrex hailed him back to the table. A smiling man in a spotless white laboratory coat had joined the Wing Commander. He shook hands with Chris.

"Mr. Winthrop—Christopher Godfrey."

Their host led Chris and Greatrex through a door and

along a corridor where the faint sound of machinery met them. Then Mr. Winthrop opened a door and ushered them into a light and airy room. It had a number of work benches and tables at which were engaged some dozen or so men, also in white coats. Several diving suits in various stages of assembly lay on the benches with component parts at hand in trays or on the tables. In one corner of the room toward which the party was heading a different type of work was going on. Here an even more fantastic form was taking shape.

It was made mainly of rubber, heavily ridged yet pliable. The joints and fastenings were very different from those of the diving suits. A mass of wires was built into the fabric, some obviously to add strength, others to carry an electric current. The transparent helmet was of novel design,

though it had the familiar built-in microphone and loudspeaker. Mr. Winthrop halted in front of this weird form.

"This is a G-suit," he told Chris. "A full-size one, of course. Yours will be a smaller edition of it."

The boy examined it with interest. Many complicated bits still lay around awaiting assembly. Small, strangely shaped oxygen containers lay at hand. Two men were working on the suit, but they paused as Mr. Winthrop explained various features to Christopher.

"We work on the principle of compensating pressures/' he said. "When a certain part of the body is being distorted by acceleration, we build up pressure around it to give it support. This is automatically adjusted according to the degree of acceleration being experienced. Of course the actual method by which this is achieved is still hush-hush."

For about half an hour Mr. Winthrop described the G-suit in considerable detail, together with how it was operated. He explained that the one to be made for Chris would be almost identical, except in size, with the one at which they were looking. Only in the helmet would there be any modi-44

fication. He understood that an optical-instrument firm was to cooperate in its manufacture.

"Now perhaps you would like to see how we're getting on with your own suit," Mr. Winthrop said. Chris eagerly indicated that he would.

They now entered a smaller workroom. Chris looked around for a smaller edition of the suit he had just seen, but without success. Instead, he saw a wooden figure on which two men were working.

Mr. Winthrop smiled. "Let me introduce you to your other self," he said.

Chris saw that the figure was about his own size. He realized the reason for the numerous careful measurements that had been made of him after his medical examination.

"This is what we call a lay figure," Mr. Winthrop explained. "It enables us to make the suit to fit you without having you here all the time. You see, no effort is spared to insure perfection. Nothing less will guarantee efficient

working."

"I don't see anything of the suit, though," Chris remarked.

"No. We haven't begun to assemble it yet. We must get the lay-figure correct first, then we can mold the various pieces around it. When you come again in two days, we'll have made a good start on it."

"When are you scheduled to have it ready for a try-on?" asked Greatrex.

"On Sunday morning, if all goes well. We should like you here about eleven a.m., though you'll be welcome to come any time you like."

"Thank you. Sir George would like me to bring Christopher here as much as possible so that he can become familiar with the suit even before he puts it on. We'll be along on Friday to see it taking shape, if we may."

"Certainly," Mr. Winthrop replied. "I look forward to seeing you."

"Well, what did you think of it?" Greatrex asked Chris as they were being driven back to Theobalds Road.

"It was fascinating. But those suits look very heavy. How much do they restrict movement?"

"To some extent, certainly, though one of the main objects of the present design is to preserve the utmost possible mobility. I believe you're to be able to perform quite a range of mechanical actions. As soon as your suit's completed you'll have plenty of opportunity to test it."

They did not see Sir George Benson at lunch, but the Wing Commander had already had instructions about the rest of the day's program. Before long they were again being driven out of London. This time their destination was the testing and research center at Farnborough. As they went along, Greatrex explained to Chris what they were going to do.

"Our civilian scientists have completed a large centrifuge out here. It's an apparatus for testing pilots and their instruments under conditions of great acceleration. It consists of a long arm rotated by a powerful electric motor. There's a small cabin or gondola attached to this arm, and the person or gadget to be tested is sealed up inside. Then the juice is switched on—and

round and round you go."

"How fast?"

"Well, as you know, it's the rate of acceleration that's important. Once a high speed has been achieved it can be maintained without much discomfort. It's just how quickly one has to reach that speed that is all-important. The centrifuge can give accelerations up to twenty-two *g'—twenty-two times the force of earth's gravity. Now under a force of one *g' a body increases its speed by twenty miles an hour every second, so if it's subject to twenty-two *g' it would be traveling at four hundred and forty miles an hour at the end of the first second, eight hundred and eighty miles an hour at the end of the next second, thirteen hundred and

twenty miles an hour at the end of three seconds, and so on. It won't be necessary to accelerate at anything like this rate. I'm not quite sure what the maximum 'g' will be for your rocket. That's Sir George's department. I should imagine it will be six or seven."

"How many 'g' have pilots withstood?"

"I believe one chap let them take him up to seventeen *g for two seconds without any permanent ill effect. It's quite usual for pilots in the G-suit to take their joy ride up to nine g.

"What can they stand without the suit?" Chris asked.

"I'm told it gets mighty uncomfortable at four 'g.' If you like, you can have a try-out this afternoon."

"I'd like to very much. I may as well get used to it as soon as I can."

The car began to slow down. "Well, we're here now," Greatrex said.

Buildings of various sizes and shapes indicated a wide variety of uses. There were several types of wind tunnels; there were water tanks, pressure chambers, and a host of other things. The newest building was circular in shape; it was the centrifuge. Chris and the Wing Commander made their way to the administration building where they met the senior officer on duty. He had evidently been told of their coming, for he informed them that the centrifuge had been made ready for a low-speed run. But first it was

necessary for Chris to have another medical examination, an ordeal he must undergo before and after every run. Another officer led Chris to a room where he went through the familiar routine. On his being pronounced fit, the party made their way to the circular building.

When they had entered it, they saw that the dominant feature was the huge electric motor in the center. From a vertical shaft projected a long arm of latticed steelwork. The gondola hung beneath, about halfway between the

center shaft and the extremity of the arm, which reached to within about four feet of the outer wall. All around this wall was a gallery on the same level as the gondola. High up, behind a large panel of glass, Chris saw the control room with its innumerable instruments and dials. Two white-coated members of the staff were peering down through the glass and several others stood talking around the gondola. They looked at Christopher with barely disguised curiosity.

While the Wing Commander and the others were talking together, Chris had a peep inside the gondola. It was, he could see, suspended from the arm and was able to swing freely. It could rise to the horizontal according to the speed at which it was being rotated, and it could be given a spinning motion. Inside was a seat—or rather a divan—with several hinged sections. There were many wires inside, and the whole interior could be tightly sealed so that a wide range of atmospheric conditions could be simulated.

"Ready?" one of the staff asked Chris.

Chris indicated his eagerness to have a go. He was asked to take off his jacket and to lie on the divan. He found it conformed well to his contours, his knees being raised and his whole body relaxed on a comfortable padding of spongy rubber. Two of the white-coats climbed inside and began fixing the holding straps and other pieces of apparatus to him. Chris was asked to use a breathing mask, not because of any need for oxygen, but to register and control his respirations. A speaker was in the gondola and a microphone in the mask, so that he could talk with those in control throughout the test.

"We're only going to take you up to one *g' for ten seconds to begin with," the man in charge told Chris. "We'll increase the dose gradually. Do you think you could recite a poem or something during the test? Anything will

do."

"Oh, dear! I think I've forgotten all the poems I've ever learned," Chris answered. "Still, I think I could manage 48

'The quality of mercy is not strain'd.' I hope you'll take that

»to heart." After they exchanged a few more words, the door of the gondola was sealed. For a few moments there was an unearthly silence inside. Then the speaker and mike were switched on, and Chris heard a voice asking if he was all right. He assured control that he was and, as he was asked to do, began to count slowly up to ten. Communication having been satisfactorily established, everything was ready. Chris was warned to be ready for the start. In the next few seconds he wondered a little anxiously what he was about to face. He hoped he didn't show that he was just a little afraid. Then he felt a slight quiver in the gondola—and he was off.

Chris had often been in a fast elevator, but never in one that had moved as fast as this. Had he been standing, the effect would have been very uncomfortable, but in his reclining position it was really not so bad. His chest and stomach felt heavy, and he was pressed down into his divan for, as the arm had gathered momentum, the gondola had swung alongside it. To Chris it seemed that he was rising upward and outward.

"I thought you were supposed to recite," a voice remarked in his ear. "What's happened to 'The quality of mercy? Did it get strained after all?"

"Sorry," the boy replied. "I forgot about it."

"It's too late now for this run."

The gondola had begun to slow down so that Chris felt his internal organs becoming more normal. In a remarkably short time all movement ceased and the door was opened. Someone removed the breathing mask and detached the straps and instrument contacts. Chris swung off the divan and, with a little stumble, stood up on the solid floor outside. Greatrex greeted him with an encouraging grin as he was hurried off for his postrun examination.

Within, a quarter of an hour Chris was again sealed inside the gondola. He

was to have another run at the same acceleration, but for fifteen seconds instead of ten. This time the sensations were no longer novel and he managed to recite his poetry throughout the test.

Altogether during the afternoon Chris made six runs, each one a slight increase on the one before. The last run for the day was at one and a half "g" for twenty-five seconds.

"A good start," commented the Wing Commander. "Another try tomorrow."

When they arrived back at Theobalds Road, Sir George was waiting for them. He listened to a full account from Greatrex of the day's proceedings and nodded his head in approval.

"Good. Now what do you chaps say to a night off tonight? How would you like a show?"

The answer was a foregone conclusion. A little later Benson's big Bentley was weaving its way toward Victoria.

"I've three good seats at the Palace," he said to Chris who was sitting in the front beside him. "Have you ever seen the Crazy Gang?"

Chris said that he hadn't, though he'd heard a lot about them. After parking his car on a bombed site in a back street, Sir George led his two companions into a restaurant where they had a wonderful meal. Then they walked toward the Palace and were soon settled in three excellent seats. There were still some ten or twelve minutes before the show was due to start, and Chris looked around him with interest. The theater was filling up rapidly, and the music of the orchestra was occasionally submerged in the chatter of arriving parties and the banging of seats. Promptly on time the curtain went up.

Whatever the future might have in store, whatever ordeals he was due to face at Farnborough, Chris was determined to enjoy the entertainment to the full. This also 50

seemed to be the idea of the other two. Soon all three were laughing uproariously at the antics of the Gang. At intermission, Greatrex insisted they all have huge ices.

At last the show was over. They had enjoyed the fun immensely. As the house lights went on, Chris rose from his seat regretfully. All around him people were laughing and talking as they moved along. One man, about four rows back, did not seem to have anyone with him to exchange comment on the night's entertainment. As he followed a family party into the aisle, Chris had a strange feeling that his face was familiar. He mentioned this to the Wing Commander who became serious at once. Then he relaxed as Chris motioned in the direction of the man to whom he was referring.

"Oh, he's one of our chaps," he assured the other two. "He's been detailed to see that we don't go astray. He hasn't been far away from us since we left Theobalds Road. He was at the next table in the restaurant; that's why you recognized him. Don't on any account take any notice whatever of him. I'm afraid we shall always have a few shadows following us, but there's absolutely no need to worry."

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hapter Six

The next day, Thursday, was very warm. The sun seemed to be concentrating its heat on the airless London streets. Even though they took their period in the gym at an early hour, both Chris and the Wing Commander were bathed in perspiration by the end of it. But after a complete relaxa-

tion to cool off, followed by a cold shower, Chris felt in fine fettle. Sir George noted with silent satisfaction that their charge seemed none the worse for the complete change that had taken place in the routine of his life. Above all things, he must be kept fit and happy so that he would be able to face up to his ordeal in the best possible condition.

When they reached Sir George's room after they had finished breakfast, the scientist handed Chris a letter from his aunt. The boy was delighted and asked permission to read it at once. It was a cheerful, chatty letter, with frequent references to the pleasure it was to have Miss Darke staying with her. The note concluded by sending the good wishes of Mr. Berry. Chris was quite lighthearted as he folded the letter up and put it back in its envelope.

"If you'd like to reply, we'll arrange for it to be delivered," Sir George promised. "You won't mind if I read your letter before you seal it, will you? You understand how careful we must be."

"How did this come?" asked Chris.

"Oh, we fixed things up with Miss Darke before she left," Greatrex answered. "It didn't come through the usual channels. If you'd like to write back we'll see that your letter's delivered."

When Chris said that nothing would please him more, he was quickly provided with paper and pen. Sir George asked him not to refer to any person, besides himself, by name; and, of course, not to mention his visit to Farn-borough.

"I think perhaps it would be safest if you confined yourself to our seeing the show last night. Your letter will be perfectly safe in transit, we believe, but we mustn't risk any leakage after its arrival."

The letter was soon written to the satisfaction of both Chris and Sir George who promised that it would be delivered next day. He informed Chris that he was to spend 52

the day at Farnborough having more runs on the centrifuge. Then he probably should rest for a few hours, for at midnight they were to visit a private observatory where he would take his first view of the moon by telescope.

During the morning Chris had six more runs in the gondola. Now he had completely lost that instinctive little panic he had experienced at first. At the request of the officer in charge at the controls, Chris described his sensations throughout each run. As the acceleration increased he began to have what he called "singing" in his ears. Breathing was more difficult, and considerable effort was required to raise his arms.

As a break, Chris was invited up into the control room where he saw records of his respiration and pulse for each of his runs. He also heard a recording of his commentaries and was surprised at how indistinct some of his words were. The officer explained that this was quite normal, for movements of the facial muscles, as well as those of the arms and legs,

become a little more difficult with a higher "g." Chris had only two runs in the afternoon and returned to London early.

After tea the Wing Commander suggested a rest, as only the Good Lord and Sir George Benson knew what time they would get to bed next morning. Chris agreed but found that to sleep was more easily said than done. The noise of traffic on the road outside—so different from that at Norton-roused him each time sleep came near. With a sigh he resigned himself to wakefulness and allowed his mind to wander over the events of the last few days as he lay completely relaxed.

"Wakey, wakey!" Greatrex gently shook Chris's shoulder. "It's a quarter to midnight."

"Heavens! I've been asleep after all," and Chris slid out of bed a little reluctantly. A wash, sandwiches, and hot

coffee soon revived him, and he declared himself ready to go with Sir George and the Wing Commander.

Though it was after midnight, there was still a moderate amount of traffic on the streets. They drove for nearly an hour, passed through St. Albans, and continued along the Dunstable road for about two miles. There they turned onto a narrow road which wandered about for a mile and a half, gradually rising all the time. Houses were few and far between. Moths fluttered in the headlight beams and sometimes a pair of small glittering eyes showed beside their way. The moon, just over half full, had risen in the clear black sky.

Sir George swung the Bentley between a pair of stone pillars and along a twisting gravel drive. A large country house loomed darkly before them, and before the scientist had switched off his engine its front door opened and the figures of two men were momentarily silhouetted against the lighted hall.

"Hello, Doc," Benson called as he climbed out of the car. "We're all here."

Chris could see that it was Dr. Saunders with whom the scientist was shaking hands. Saunders introduced his companion to the others, and Chris learned from Greatrex that Mr. Perkins was the wealthy amateur

astronomer who had first observed the peculiarity of Pico. Mr. Perkins had a very fine telescope—not as large as some in the country, such as the one at the Royal Observatory at Hurstmonceux—of excellent resolving power. It had proved a most effective instrument in the hands of this talented, painstaking amateur. The government had been pleased to accept Mr. Perkins' offer to place his telescope at its disposal, and Dr. Saunders had spent a great deal of his time already making use of it.

Greetings over, the party was led away by Mr. Perkins up a well-kept path to the small hillock on which he had 54

built his observatory. With a certain justifiable pride he stood aside for his guests to enter. Chris had never been inside an observatory before. He saw the telescope in the center, pointing up through a slit in the domed roof. It was mounted so that it could easily be swiveled in any direction. An adjustable couch was below the eyepiece so that the observer could recline in comfort for long periods of time. Other instruments, some of which Chris recognized as special cameras, were on racks around the room. A large metal filing cabinet was in one corner. Going past it Chris noticed that its drawers were labeled with the names of the moon and planets.

In the brightly lighted interior Chris saw Mr. Perkins looking at him intently. Evidently, Chris thought, he's been told all about me. He was beginning to get slightly uncomfortable at the way people looked at him when they knew he was going up in a rocket, and he hoped it wouldn't be necessary for too many people to know.

The three men had been talking together. Now Mr. Perkins switched off the lights, leaving the observatory dimly illuminated by a number of small blue bulbs. He went to the couch and lay on it as he looked through the eyepiece. Then he put his eye to a smaller telescope which seemed to be attached to the larger one. This was a sighting telescope which helped the observer find the object in which he was interested. The large instrument gave a much greater magnification over a smaller field.

When the astronomer had found what he sought, he placed the couch in the most comfortable position beneath the large telescope which he had had to move a little. For a few minutes he stared intently through the eyepiece. Then he rose from the couch and Dr. Saunders took his place. Chris had the next turn.

At the suggestion of Dr. Saunders, he used the sighting telescope first. He saw the gibbous moon, no longer a flat

disk in the sky, but a serenely floating sphere—two thirds in brilliant illumination and the rest a pale ghost. Over the end of the small telescope were stretched two thin wires, one vertical and the other horizontal. Mr. Perkins explained that a small area around the point of intersection was the field of the larger telescope. Chris noticed that the wires crossed on the crater Plato, and that the image he was looking at was inverted in comparison with direct vision. As the sunlight was striking the moon from one side, the mountains and crater rims were throwing sharp black shadows, an effect that added to the impression of depth and solidity. Chris looked intently at the spot where he knew Pico was. Sure enough, the little peak with its small black shadow could just be seen under this moderate magnification. Then, again at the suggestion of Dr. Saunders, he transferred his attention to the larger eyepiece.

The result was startling and beautiful. Now the moon's fantastic surface became visible in considerable detail. The shadows threw all projections into relief. Chris had the overwhelming impression that he would be able to touch the moon if he stretched out his arm. Eagerly he sought Pico. Now the little mountain stood up proudly from the surrounding plain. He tried to remember just where the dome lay that was causing all this investigation. Yes—there it was. Peering intently, he could just make out this mysterious formation, no larger than the head of a pin. His admiration for Mr. Perkins' powers of observation became very great.

After almost ten minutes on the couch, Chris was asked to come back to earth and have a look at some photographs. As he stood up, Mr. Perkins switched on the full lighting. For a few moments they all stood blinking in the glare. Then their host went to the "Moon" drawer of the cabinet and returned to a small table with a number of prints. They were the very latest he had taken of Pico, and he explained that he had enlarged them as much as possible. Unfortu-56

nately, in doing so, the detail had not come up well, which was always the case when trying to enlarge beyond a certain limit.

All pored over the photographs with interest. Dr. Saunders pointed out that

it seemed as if a smaller dome had appeared alongside the original one. However, its nature was beyond the power of exposures taken from the earth's surface to reveal. Observation from above the atmosphere should prove, among other things, the existence and nature of both domes. Photographs would be taken automatically when Chris had sighted the rocket instruments on their objective.

Each of the party had several turns at the eyepiece. Each time Mr. Perkins adjusted the direction of the telescope as required. When Sir George at last announced that they must return to London, Christopher complied regretfully. He had felt the almost hypnotic fascination of the lunar landscape bathed in that cold and merciless light. It was about 4 a.m. when Greatrex and Chris entered their sitting room.

"Sleep as long as you like/' the Commander told Chris. "We have a free morning and don't go to Tolworth till afternoon. Good nightl Or rather, good morning, young fellow!"

Chris clambered into bed but his brain was too active for sleep as it conjured up memories of the scene he had witnessed barely an hour before. How long would it be, he wondered, before the first men stood among those awful mountains, or in the vast craters, or on those flat and lifeless plains? He did sleep eventually, but his slumbers were troubled by visions of the silent lunar landscape.

It was almost midday when Chris emerged from a delightful state of semiconsciousness and was at last fully awake. The sound of the Wing Commander spluttering in the bathroom prompted him to throw off the bedclothes and to cast away the last vestiges of sleep. He found it strange that the meal in the dining room was lunch when his in-

stincts told him it should be breakfast. But he thought little about it, for he was looking forward to seeing how his G-suit was progressing.

Sir George accompanied Greatrex and Chris to Tolworth. Mr. Winthrop was ready for them and immediately led the way to the workroom. There it was soon apparent that considerable progress had been made.

On the lay figure the suit was taking shape. The legs and body were in position and the arms about ready to be joined on. There was much to do,

but Mr. Winthrop was confident that they would be able to hold to their schedule. The helmet was still at the factory of the optical firm. It was almost completed and would be delivered first thing next morning. It would be necessary to make a number of final adjustments after Chris had tried it on.

Benson seemed well pleased with the situation. After a few more details were explained to its future wearer, Mr. Winthrop invited them all to have a cup of tea in the directors' canteen. During this pleasant interval an interesting discussion arose about the possible design of a space suit for use on the moon. Chris listened with extreme interest to this sometimes highly technical debate, and concluded that when the time arrived for a lunar landing the space suit would not be lacking.

Dr. Saunders had arrived at Theobalds Road by the time the trio had returned there. Chris, Greatrex, and he spent a lively couple of hours in the evening during which the astronomer spoke of the stars and planets generally and the moon in particular.

The days were slipping by very quickly, Chris thought, as he flung himself into bed that night.

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hapter Seven

At Woomera, deep in the Australian desert, was the Rocket Research Establishment set up after the Second World War and subsequently expanded. Woomera was operated jointly by the British and Australian governments. It had been selected because it was in the largest uninhabited area in the Commonwealth that was, at the same time, reasonably accessible. In the early stages of its construction every nut and bolt, every grain of flour, even every gallon of water, had to be ferried in by a great airlift. Later, a railway was built crossing the hundreds of miles of arid scrub.

The Australian government, in an effort to soften the landscape, had planted twenty-five thousand gum trees. It was also hoped that the rainfall would be improved. Most of the inhabitants of the little town—scientists, technicians, administrators, and their families—had entered into the spirit

of the thing by laying out lawns and flowerbeds around their concrete or prefabricated bungalows. Water, still scarce, was pumped and piped from artesian wells. An unpardonable sin in this new community was to throw away precious water after washing. Every drop was used to support the local flora, and some quite creditable results had been achieved.

A very short walk, however, brought one to the end of the gaily colored bungalows with their neat little patches of green. Away in front, and on all sides, rolled the great desert—heart of the Australian continent. A regular air service connected with several of the nearest centers of popula-

tion; the weekly train hauled all the heavy stores and equipment.

Quite a social life had been built up by the men, their wives, and families whom their work had brought so far from their normal homes and surroundings. Sir George Benson and his senior colleagues had encouraged this, believing that a happy man makes the best worker, be he mechanic or physicist.

While its Director, Sir George, was away in England, the Rocket Research Establishment was under the control of Mr. W.H.R.G. Gillanders. "Billy Gilly," as he was invariably called—in private—by his closest friends, was a huge, sunburned Australian. A live wire, a good organizer, and a sound scientist, the Deputy Director had even more letters after his name than he had initials in front of it. But now Billy Gilly looked really worried as he faced the officer sent over from Scotland Yard.

"So you've been unable to get a lead at all?" he asked.

"No, sir," the Scotland Yard man replied. "I've gone through everything and everyone with a toothcomb, and I haven't a clue. Here's my written report. What would you like me to do now?"

"Oh, carry on, of course. We mustn't let up for a moment. We've simply got to find out how this leakage occurs, and you may stumble across it at any moment. Do you think it is someone out here or in town?"

"Out here" was the actual testing area, about seven miles from the living quarters, fondly described as "the town." The offices, control rooms, and observations posts were all bare concrete structures set up on the plain like

the toy building bricks of some giant's child. Only carefully screened scientists, technicians, and other specialists were allowed "out here." Families and others could proceed only as far as the huge barbed-wire fence that completely surrounded the testing area. 60

The police officer hesitated before he spoke.

"It's hard to say, sir. From the nature of the information that's getting away, it seems to be someone fairly high up in your organization. Yet every man was hand-picked and has been under the microscope a dozen times. The domestic personnel haven't been subjected to such close scrutiny, but then, none of them has access to this top info!"

"Well, do all you can. If you need more help let me know at once."

As the door closed behind the officer, Billy opened the report lying on his desk and read it carefully. Who the blazes could it be who was persistently passing on even the most closely guarded secrets? It must be one of a small circle whose duty it was to carry the vital knowledge. For the hundredth time he mentally reviewed all the possibilities—Halifax? Rodd? Campion? O'Neil?—perhaps about ten people in all. The poisonous thing about it was that one didn't know whom to trust.

Get rid of the lot? That was hardly fair or even possible with the preparations of this new, top-secret project in full swing. Billy prayed fervently that something might break down before Benson returned to supervise the final stages. Meanwhile, a thousand and one duties and decisions clamored for attention. Almost—but not quite—he succeeded in putting the matter out of his mind for a little while.

As soon as he could, Billy left his office and, oblivious to the jangling telephone, jumped into a jeep. He drove rapidly for about half a mile and pulled up at another series of concrete buildings surrounding a flat patch. This was the firing apron from which the rockets were actually launched.

In the center of the apron rose a partly completed projectile, rapidly taking shape under the busy hands of a score of technicians. A handful of civilian scientists were scattered about, each supervising some particular aspect of the construction. Billy talked to most of them, sometimes climbing

inside the rocket shell, sometimes mounting the tall tower ladder outside. London had requested a terrific number of modifications on this latest model. Some of them Billy frankly couldn't understand. Benson had said that a very important firing must take place before September thirtieth, and that he would explain its objective when he returned to Woomera about the tenth of August. Mr. Gillanders was meanwhile requested to arrange for the modifications to be carried out as soon as possible. Quite a number of instruments that had always been included in the payload were to make way for some novel ones that would arrive about the same time as Benson himself. Billy felt a mixture of pride and curiosity as he looked over the sleek line of the rapidly growing rocket.

When Billy at last left the grounds and drove to town that evening, dinner was waiting for him. As he drew his chair up to the table, his wife, an attractive woman almost as tall as he was, pushed an envelope in front of him.

"A message from Sir George," she said. Her husband noted that it was addressed to her. He drew the folded paper from the envelope and read. "Can you accommodate a guest for a few weeks? Wire if not convenient."

"I wonder what's happening now," mused Billy. "Can he have got himself engaged while he's been in London, do you think, Helen?"

"Hardly had time, has he?" His wife laughed. "How long has he been away —about six weeks now, isn't it?"

"Some of you women are pretty fast workers," Billy joked.

"Aren't you jumping to conclusions, rather? We don't know if the guest's a man or a woman. I'll get the spare room ready if you agree."

"It's all right by me. Where's Betty?"

"She's gone to the MacFadden's with Paula. I don't think she'll be long. She has quite a lot of homework tonight." 62

"How does she like the idea of having a stranger in the house?"

"It cant make much difference to her; I expect shell soon be quite happy whoever it is."

"Right. Then do let Benny know that we'll be pleased to help," Billy said. "What's for dinner?"

Billy Gillanders did not sleep well that night—a most unusual thing for him. For some reason his brain was too active to allow relaxation. He turned over in his mind problem after problem connected with the station. In an effort to direct his thoughts into less worrying channels, he pondered over his chief and his guest. Who could he be bringing, Billy wondered. Could it be some V.I.P. here to watch the next firing? Was it just some friend of Benny's? Could it be someone concerned with the information leakage that still hadn't been plugged?

At breakfast next morning Helen chided her husband about his restless night. Their daughter Betty, sixteen years old and bidding fair to be as tall as her parents, was intrigued when her mother told her about Sir George Benson's telegram. Speculation was rife around the breakfast table.

The meal was over, though discussion was continuing, when a voice called from the open window, "Aren't you coming to work this morning?" Billy opened the door to Halifax and Rodd, the two electronics experts. Soon the three men were driving to the station.

"Any word from the Big Chief?" Rodd inquired.

"Helen had a message from him yesterday, asking if we could put up a guest for a few weeks. He hasn't any room in his own small bungalow."

"Any idea who it is?"

"Not the foggiest. Nor why the visitor's coming. I expect Sir George has a reason, although we'll all be rushed off our feet with this special firing on September thirtieth. Any-

way, the chief 11 be here in a fortnight or so; we'll get all the latest info then."

"I hope he'll let us know about these modifications. Do you know, my own little section has twenty-eight of them to rush through. What some of them are for, I can't even guess."

"Some of the chaps are getting quite worked up about it," put in Halifax.

"Did you know that the whole layout of the warhead has been altered? Can't think for the life of me what new gadgets the chief's aiming to send up this time. Must be something pretty big if the space we're having to make is anything to go by!"

"I think perhaps I'll have all section heads in for a powwow in about an hour's time. Could you let the others know?"

"Surely. We'll be there."

Their jeep having reached the operation zone, the men parted. Gillanders went thoughtfully into his office. An hour later the other chief scientists began to drift into the office in ones and twos, and soon they were all assembled.

The Deputy Director looked around the room at his colleagues. He had known most of them for several years. All were first class in their own spheres and were working enthusiastically. Yet, thought Billy with a sense of shock, it was a pound to a gooseberry that one of them was a spy. On the advice of the man from Scotland Yard, facts about the information leakage had been kept secret. None of these men had any idea that there was a traitor in their midst— except Billy and the man himself.

The meeting did not last long. After some time devoted to technicalities, the Deputy referred to the speculation about the object of the modifications.

"I know no more than you do," he said. "They are made at the urgent request of the British government, but their 64

exact purpose will not be disclosed until Sir George Benson returns to the station."

"Do you think that room's being made to send up another monkey?" one of the scientists asked.

"Too large for that," cut in another. "The little beasts didn't take up a quarter of the room we have to find from somewhere."

"Perhaps the chiefs thinking of taking a little trip himself," grinned a third.

"All right. Break it up now, chaps," Billy said, and in a few minutes he was

alone again in his office.

He would be glad when Benny was back. This speculation about the next firing was good-humored, though the men were surprised that even he did not know its purpose. Billy felt that if ever it became known that a member of that little fraternity was suspected of systematically revealing the results of their work to a potential enemy, it would be the balloon that would go up and not the rocket. He glared at the wall calendar as if it were responsible for the time he must wait until Sir George would be back.

Betty Gillanders was really quite a nice girl, though sometimes a little difficult. Her father was engrossed in his job and her mother was, perhaps, a little too indulgent. At sixteen Betty had reached the age when she took an interest in her appearance and its effect on other people. Her parents had always encouraged her to mix freely with both boys and girls, and she had many friends among the husky lads at Woomera. Betty liked most of her father's colleagues. Mr. Halifax and Mr. Rodd were her particular favorites.

Betty, with several other young people, always went to the weekly dance which had become a feature of the social life of this isolated community. Now not only Betty but almost everyone was extremely upset when the Deputy Director insisted that a number of scientists and technicians

could not go to the dance but must work on speeding up the modifications to the rocket. Poor Billy was most unpopular with the other two members of his household, yet he couldn't tell them of the instructions he had received that morning from his chief by special courier.

It was then that, in the privacy of his office, he had received the first clue about the reason for the mysterious activity now animating the whole research station. It was contained in the short sentence: "Into the space created by the modified instrumentation will be fitted a contour couch."

"Heavens above!" said Billy to himself. "It's to be a manned rocket!"

For a time he was completely shaken by the implications of his deduction. Surely not! They weren't nearly ready for such a revolutionary step. With the best progress in the world, it would be at least another two years before they dared think about risking a human life in a rocket. Then he began to think how absurd his assumption was. There were a score of reasons why it

was impossible, not the least of which was the question of size.

"Why, there isn't room to send up a child, let alone a man," he muttered to himself. Then, with a shrug of incomprehension, Billy turned to the new tasks that his latest instructions had laid upon him.

The decision to ask certain key men to miss the dance in order to put in extra time at work was not taken lightly. The Deputy Director knew the value of high morale for his brilliant but often temperamental staff. But if the preparations were to proceed according to the time schedule he had received that morning, then the dance and several other things would have to be sacrificed.

How Billy wished he knew what lay behind all this feverish activity! A full explanation of the mystery to his colleagues would insure their wholehearted cooperation and maximum effort. But even he did not know the answer and

could only make a surmise, which he admitted was fantastic. No. The more he thought about it the more certain he became that the plan must be to send up another monkey, or rather an ape. But why the contour couch? The animals had always been anesthetized before and simply strapped into their little suits.

Later that morning the police inspector from Scotland Yard asked to see the worried Deputy Director. He, too, had received disturbing news—that information was still getting out of Woomera, and that now it had to be stopped at all costs. If the leakage hadn't been stopped by the time Sir George Benson returned, he would have to institute severe security restrictions. The two men discussed the situation for some time. Then the inspector made a proposition.

"Sir, Td like to try an experiment. We know that the person passing on the information must be one of about ten of our top men. I suggest we divide them into three groups of three or four each, and provide each group with different false information. Whichever piece gets out would tell us in which group the responsible person is. Then if we repeat this with a different arrangement of personnel, we ought to be able to lay hands on the spy."

"Ingenious," Billy agreed, "but we're up against the time factor. From an

analysis of our previous experience it seems to take up to about a month between the time the information is disclosed here and our first inkling that someone has passed it on. The Director will be back in about twelve days, which is too short a period to insure any results."

"That's so. Though some of the leakages have only taken ten to fourteen days before we've heard of them. I'd like to try it out, sir, for even though we may not pinpoint the offender, we may get one report through, and that would at least narrow the field."

"I'm ready to try anything," moaned the Deputy Director. "What do we do?"

"Well, sir, you of course will have to carry this out. I think the men have a fair idea already that somethings amiss with the security arrangements. You'll have to fix the groups so that each looks a natural setup for confining the information you disclose to the minimum number of people."

Billy pondered over this for a while.

"Right," he concurred. "It'll be a bit tricky thinking up some dope that can be guaranteed to fox them. They're not fools, you know. It'll have to seem genuine, but at the same time it must not mislead them so as to cause any change in their present program of work. I'll have to tell them that owing to this wretched leakage, we're having to sectionalize information instead of making it available generally. Each group will have to undertake not to disclose its own data outside."

"Thank you, sir. I think it may work. In any case, it's well worth trying. They're probably beginning to suspect each other of spying, and this will bring things into the open."

"Suppose the guilty party suspects the trick?" Billy asked. "He'll shut up like an oyster."

"We mustn't let him know that we intend to change the groups around after the first leakage. In any case, sir, I suggest you make your false information appear so vital that the spy, whoever he is, will be compelled to pass it on, whatever the risk."

"Whew! So the dope must appear not only genuine but vital! Something to

do with the future that won't affect present progress? It'll need a great deal of thinking about, but I'll see if I can manage it."

It took Billy the best part of the next two days to think out suitable stories and to prepare any supporting documents that he thought would be required. At the end of that time he called all his senior staff together and informed them of the new arrangements. 68

"Gentlemen, I imagine you already know that there has been a serious loss of vital secrets from this establishment, and we do not seem able to trace the source. It may be one of you—or it may be someone close to you. In any case, I propose to discontinue the practice of making information and technical data available to you all generally. Instead, you will now work in groups according to the affinity of your departments. Only relevant information will be given to each group, with the very strict instruction not to discuss it except among the group. Is that clear?"

Billy noted that there were a few red and angry faces among those listening to him. At this stage he could not tell whether this resentment was caused by the official confirmation of the betrayal or by the restrictions he was about to impose.

"Any questions?" he asked.

For a moment there was silence, each wondering who would speak first. It was Rodd who started.

"Do you mean to say that someone here in this room is a traitor? What grounds have you for saying it's one of us?"

"Because the confidential data that has found its way through the Curtain was known only to twelve people—Sir George Benson, myself, and you ten."

"So the Director or you may be guilty," Halifax remarked quietly.

Billy was startled for a moment.

"Yes, I suppose we also have the opportunity," he admitted. "However, that's the business of our superiors. I very much regret that in the absence of the Director it has fallen to me to take this unpleasant step, but owing to

the critical nature of our project, I have no alternative."

"What a happy band we shall be," Campion observed. "Everyone suspicious of his neighbor. It can't go on."

"The work will go on," Gillanders said with deliberate emphasis. "Can any of you suggest anything better?"

"Only find out which one it is and shoot him," Rodd put in grimly.

"Nothing would give me greater pleasure," Billy replied with equal feeling. "The trouble is—finding out."

"So that chap from the Yard has had no luck, then?" O'Neil asked.

"You guessed he was a detective? I suppose you were bound to find out sooner or later. He's an inspector from Scotland Yard and he's been trying to get a lead on this job. He hasn't managed it. Hence these restrictions."

"If security has broken down, why not call the whole thing off and replace us all with some new blood?" suggested Rodd.

"Can't be done. You know already that we've instructions for the next firing to take place about the end of September. With all the modifications a new team wouldn't have an earthly chance to pick up the threads in time. We have to choose between two evils—one, failure to maintain schedule, the other, this filthy betrayal. Our instructions about the date of firing are definite, so we are compelled to accept the second evil. I think we can reduce the amount of information escaping by this method of splitting it up among groups. Naturally, if we could discover the person responsible we could immediately revert to the former free exchange of all the information among ourselves."

"Is that an invitation to us to spy on each other?" asked Halifax.

"You can take it however you like," Billy retorted. "I like this thing even less than you do, for until the Director gets back I take all the kicks. That's all I have to say. Any man wishing to do so can resign at once and we won't ask for the usual notice."

No one spoke, but Billy could sense the unmistakable change in the

atmosphere. No longer was there the free and easy camaraderie that had existed among these scien-

tists and technicians engaged on an interesting but arduous job away from ordinary civilization. He felt terrible about causing the end of this spirit of mutual trust and cooperation, then his resentment crystallized on the unknown person who was the author of it all. He informed the men that he would be nominating the groups and passing to each its future instructions. Then, with compressed lips and unsmiling faces, the meeting broke up.

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hapter Eight

While Deputy Director Gillanders wrestled with his problems at the Woomera Research Establishment, his chief in London read his reports with growing concern. As a result, Sir George decided to return to Woomera as early as possible. If necessary, he could leave Chris to follow with Greatrex. But before he could leave, Benson felt he must make quite sure of the efficiency of young Christopher's G-suit. It was with considerable annoyance that he learned from the makers at Tolworth that it would not be completed until Tuesday, August seventh. This delay of twenty-four hours was due to the complicated helmet, which was of a completely new type. Since Chris, when wearing it, would have to use a telescope, a part of the transparent headgear was in the form of a lens. To the outside of this he would have to apply the specially designed eyepiece.

Benson explained this to Chris as he was informing him of the extra day that this postponement had given them.

"You can either take a quiet Monday off tomorrow, or you can spend the day at Farnborough. ,,

All the previous day Chris had been at Farnborough and had had numerous runs on the centrifuge. He had now reached the maximum "g" that was safe without protection, so he wondered if Sir George would mind his having a change.

"Well, Td like to go there," he said. "But I wondered if, instead of the merry-go-round, I could have a flight in a jet—that is if they'll be flying on

Monday."

"Of course!" Benson snapped his fingers. "J ust ^ e thhig' I ought to have thought of that before. I'll arrange for you to have plenty of flying on Monday. You can break the sound barrier and experience a few seconds of free fall. It'll all be good training. Tonight Td like you to visit Mr. Perkins again and have another look through his telescope. You'll find the appearance of the moon changed. It's now almost full, and the shadows will have practically disappeared. Don't stay too late, and I'll fix it up for you to be taken to Farnborough at about ten-thirty tomorrow morning."

Chris thanked the scientist. He spent the day quietly, writing a long letter to his aunt and having a session with the Wing Commander in the gym. In the late afternoon Sir George entered the sitting room and asked Chris if he would like to go to church. Chris said that he would and asked if they could go to Westminster Abbey.

Dr. Saunders joined the party a little later, and before long Chris found himself sitting quietly with the three men in the historic church. The music, the singing, the familiar service, all combined to create a feeling of quiet happiness. Sometimes his gaze wandered around the wonderful building, rich with memorials to the greatest in the land. Here, indeed, was written in metal and stone the record of England's great. Each—whether he was poet or politician, scientist or explorer, king or commoner—had made his contribu-72

tion to the advancement of his race. Each had helped to take a tiny step forward down the long corridor of human progress.

After a light supper Chris accompanied Dr. Saunders and Greatrex out to Mr. Perkins's observatory. Clouds interfered a little with visibility, but he was able to spend another fascinating session peering at the wonders of the earth's companion through space. As Sir George had pointed out, the shadows thrown by the mountains and crater rims were almost absent, but the light-colored rays, radiating from several of the craters and stretching in straight lines for hundreds of miles, were very prominent. These mysterious markings crossed mountains, clefts, and other craters without deviation, and the brilliant illumination of direct sunlight made them the most noticeable features of the lunar landscape.

Chris had much more difficulty in locating Pico, as its black shadow had gone. The dome alongside was equally hard to see. Dr. Saunders explained that the choice of date on which Chris would make his journey into space was decided by a delicate balance between conditions of maximum reflection as they now saw them and of maximum visibility as when they had observed the moon on the previous occasion. Clouds and a light fall of rain put an end to the activity in the observatory.

Shortly before midday on Monday Chris climbed into the seat behind the pilot of one of Britains' fastest fighter planes. His small size had caused a little difficulty in fitting him with a flying suit and oxygen mask. As it was essential for the latter to fit well, it was decided that he would not have to wear it during the flight except in an emergency. The operation would have a ceiling of twenty-five thousand feet, at which altitude the pressurized cockpit would be adequate.

For an hour the pilot raced the plane across the sky.

Sometimes Chris could see the pattern of tiny fields below. At other times the ground was hidden by a carpet of cottonwool clouds which reflected back intensely the brilliant sunlight in which they were bathed. The plane climbed and turned, dived and twisted, but Chris was now almost inured by his experience on the centrifuge to the sensations caused by these maneuvers. It was with real regret that he saw the ground skimming close below them as they circled the airfield to run into the wind. With a barely perceptible bump the aircraft touched down, and they were once more on the solid, prosaic earth.

The cockpit cowling was rolled back and Chris clambered out. He was greeted by the familiar mustache of his guardian angel, the Wing Commander.

"How did you like your first flip, young feller-me-lad?" he asked with a grin.

Chris left his friend in no doubt as to how much he had enjoyed the flight, as they walked with the pilot from the airfield. The pilot told Chris that another flight was arranged for 3 p.m., and that then they would fly at a speed in excess of Mach 1; that is, they would break the sound barrier. Meanwhile the plane would be serviced and refueled.

Promptly at three o'clock the plane with its two occupants taxied along the runway until it was in the correct position. Then, with a rising scream from its jet engines, it streaked along the runway. After covering a remarkably short distance Chris felt the smoothness of airborne flight. The ground fell away rapidly and soon they were nosing their way up through a layer of cloud. At times it was hard for Chris to believe they were moving; then suddenly the aircraft burst through into the fairyland above.

The pilot explained that they would be doing their run at ceiling height. Normally the plane went much higher to minimize air resistance, but it was quite capable of exceeding Mach 1 even at the limited altitude imposed. It seemed 74

to Chris that they had been climbing for only a few minutes when the pilot leveled out and they appeared to be hanging in space. Then the pilot directed his attention to one of the many dials on the instrument panel. Chris could just see over his companion's shoulder that it was indicating their speed at Mach 0.7. Slowly the needle was moving around.

Up and up went their speed. The dial now showed Mach 0.9. Still the smooth flight continued. At about Mach 0.95 Chris noticed a slight shuddering of the plane which became more pronounced as the needle crept up. Then suddenly it was gone, and he saw that their speed was now Mach 1.0. They had passed the sound barrier! Still the needle went on moving. The maximum speed they reached before the pilot eased off was Mach 1.15. Again the shuddering as they fell below Mach 1, then slowly the plane descended in wide circles, passing once more through the cloud layer until Chris caught sight again of the familiar ground pattern below.

This time Greatrex was not there to meet him, but as he walked away from the plane with the pilot the figure of the Wing Commander came hurrying toward them.

"I've been fixing up a few more flights for you later in the week," he told Chris as he joined them.

"Have you done the free-fall maneuver?" he asked the pilot.

"Oh, yes. About half a dozen times, I think," the flyer answered. "There's nothing to it."

"Then perhaps you'll be taking our young friend here up again," Greatrex remarked. "What's the maximum length of time you've been in free fall?"

"About twenty seconds, I believe. It ought to be possible to get up to twenty-eight seconds in the bus we've been flying today. Hope I click for the job. Any idea when?"

"On Wednesday or Thursday, I should think. We'll know definitely in the morning."

"Thanks for the flight," Chris said to the pilot as they parted company a few moments later. "Hope I see you again soon."

Chris was up bright and early next morning. The sustained excitement of his present mode of life did not seem to be doing him any harm. He persuaded a reluctant Wing Commander to get up and take an early session of P.T.

At breakfast Chris read another letter which had just arrived from his aunt. She was very well. She mentioned that a number of friends had been inquiring where he was and how he was enjoying his holiday. Of course she and Miss Darke had avoided giving anything away. She hoped he would write as often as he could.

Chris had a little time before he had to be on his way to Tolworth. He sat at the table and wrote a letter to his aunt, then handed it to Sir George to dispatch.

The G-suit was now ready. Mr. Winthrop, looking extremely tired, admitted to Sir George that it had been a near thing, even with the extra grace of twenty-four hours. He himself had been on duty for twenty-eight hours, as had several of the technicians. But now it was ready, except for any minor alterations that might be revealed as necessary when it was tried on.

Chris was all agog to put on the weird-looking object. It stood in the workshop, complete except for the helmet which lay ready on a table. Chris had often seen illustrations of space suits in science-fiction novels, and he saw that the one now before him had a vague resemblance to some of the more intelligent conjectures.

"Come on, young man. Stop goggling at this handsome article of apparel." Benson smiled. "Let's have a try-on right now. Can you fix him up with underclothes, Mr. Winthrop?"

"Of course. WeVe had several sets made. If you'll come and change," he said to Chris. 76

Following the white-coated man into a small side room, Chris saw that he was to strip and put on one of the light cotton garments placed ready for him. This covered the whole of his body except for his hands and his head. It was fastened by a long slim zipper up the front. He pulled on a pair of special socks, and walked a little self-consciously into the larger room, where the others were still examining the suit. Under the direction of Mr. Winthrop and with the help of two of his assistants, Chris donned the suit. This took some time but finally all was ready for the helmet to be placed over his head. He heard the hiss of the oxygen supply being turned on as one of the technicians plugged an electric cable from the back of his helmet into a piece of apparatus on the table. Then he heard the characteristic crackle of a live speaker in his headgear and saw Sir George pick up a microphone.

"Are you receiving me, Christopher?"

Chris heard the voice quite plainly and said so.

"Good. Now," Sir George went on, "I want you to walk about slowly."

Obediently Chris took a step forward. It was not difficult, though the thick suit felt fairly heavy. With two of the men supporting the cable, Chris walked up and down the room. Mr. Winthrop and his chief assistant observed him closely. The scientist continued to talk with him over the communication equipment. He directed Chris to perform various acts with his legs and arms, such as picking up articles from the table. At last, on a signal from Mr. Winthrop, Sir George told him that the trial was satisfactory and that they were going to remove his suit. While Chris sat on a chair, work began on removing his helmet. In less than a minute it was lifted clear and he was breathing cool, natural air.

It did not take nearly so long to take off the rest of his attire as it had to put it on. As soon as it was off, Benson

told Chris to go with one of the men to have a quick shower before putting on his own clothes. Before long he was dressed and back with Sir George and the Wing Commander.

"There'll be a few adjustments to make," Benson told him. "We'll be here for another try-on Thursday."

As they were driving back Benson mentioned that he had arranged for further flights at Farnborough on Wednesday. Meanwhile there was nothing much to do. Chris, he said, could spend the rest of the day looking around London if he liked. He himself would not be able to join them, as the nearness of his return to Woomera left him very little time to do all the work he had planned. He would see them next morning before they went to Farnborough.

"What shall we do, Chris?" asked Greatrex. "Historical buildings, museums, the Zoo, Battersea Fun Fair?"

"I'd like to do all of them," the boy said. "What do you suggest?"

The Wing Commander darted a sidelong glance at Sir George.

"Well—er—what about the Fun Fair? I'm sure the relaxation would do you good."

Benson laughed aloud.

"Good old Whiskers! You know, Chris, he's nothing but a grown-up schoolboy. He gets on those things as often as he can. He's spent a small fortune on penny-in-the-slot machines."

Chris smiled. "I'll try to restrain him as much as I can, Sir George."

"Fine," Greatrex beamed. "I suppose I can draw all necessary expenses?"

"Necessary ones, yes. Peep-show expenses, definitely no," the scientist answered with mock severity. "I think perhaps Christopher had better be keeper of the private purse."

In spite of the heavy responsibility he bore, and the vast 78

amount of work before him, Benson seemed in high spirits at the way things were shaping. All being well, he would be back in Australia in about a week. Though he had this wretched security problem to deal with, he would be back at the Woomera Rocket Research Establishment, where his heart lay.

So later that afternoon Christopher and Greatrex—now of course in civilian clothes—went to London's fair ground. The Wing Commander had told Chris that their "shadow" would be along just as a precautionary measure. He would be completely unobtrusive, and Chris was to ignore him altogether.

Soon the R.A.F. car deposited them at a discreet distance from the entrance. It was arranged that it would be at the same spot at 9 p.m. to take them back. Passing through the entrance, Greatrex and Christopher were soon engulfed in the crowd. The next few hours they spent in trying out almost every device in the place. Not content with a single turn on each, Greatrex had several sessions on some of his favorites.

After a break for tea in one of the restaurants they resumed their hectic round. Chris wondered by how much the petty cash account was being set back. He was beginning to get a little tired and had developed a slight headache. When the Wing Commander proposed a last fling on the Whip, he excused himself and wandered off toward a quieter part of the grounds. In the amusement section the crowd was still heavy, but here there were only occasional groups of people—mainly boys and girls who had probably spent all their money. Chris paid little attention to any of them until about four young fellows left the girls to whom they had been talking and made their way toward him.

Chris noticed their ridiculous suits. He had read about the exploits of some of these young hooligans in the papers. Norton had, happily, been without them, and this was the

first time he had seen any in the flesh. What he saw did not reassure him. About eighteen or twenty years old, they each had "sideboards," gaudy ties, and suits with velvet lapels. As they stood around him, the leader seized Chris' arm in a tight grip.

"Hello, kid," he said, giving the arm a twist. "Wandered away from Nanny,

have you?"

"Leave me alone, please." Chris spoke calmly as two more of the pimply-faced creatures laid hands on him. But their girlfriends were giggling together a little distance away, and the boys intended to show them what manly fellows they were.

"Leave you alone? We couldn't do that, could we, boys? He might get lost, mightn't you, Shorty?"

Chris tried to release himself but it was hopeless, for they only held him more tightly. He looked around to see if there was any sign of Greatrex, or of their "shadow" of whom he had caught sight several times during the evening. There was no sign of either, and it was clear that the casual passers-by would be of no help. Remembering the accounts of stabbings, kickings, and razor slashings which were the stock in trade of these young gangsters, he felt a sudden surge of fear, as he wondered what was in store.

"Lick the toe of my shoe," the leader ordered. "Come on, kiddy. On your knees and lick my shoe."

The grinning faces of the hooligans were all around him— young, ruthless faces. Chris saw the hand of one of them held menacingly in his pocket and wondered what weapon was concealed there. Should he shout and struggle in an attempt to enlist help or should he tamely submit?

Christopher felt his face flush with anger and shame as he pictured himself on his knees licking the boy's shoe. No, he could never do that, no matter what they did to him. He would put up what resistance he could and take the consequences. Perhaps Greatrex or the other man would turn up 80

in time to help, though there was still no sign of them in sight. Chris bunched his small muscles and prepared to fight it out to the bitter end. Then suddenly he relaxed them. His face red with humiliation, he slowly knelt down and commenced licking the toe of the leader's pointed brown shoe.

To let him do this the youths had released Chris. Now they were watching this tame submission with high glee and many unprintable comments. Suddenly a shout from the girls attracted the attention of Chris' tormentors,

and within seconds they had all disappeared. Chris was still on the ground as the infuriated Greatrex raced up.

"I'll bash their fat heads in," he shouted, looking around vainly for some heads to bash. As Chris slowly stood up, the man who had been following them came up.

"Where have you been?" asked the irate Wing Commander. The man made an apologetic gesture.

"Oh, well, they've gone now, blast them!"

Chris silently dusted his trousers. How much had Greatrex seen, he wondered? Had he seen him kneel down tamely? Inside him, Chris' heart was beating with emotion, just as his face blushed with shame. What would the Wing Commander think of him now? Would he understand if he attempted to explain? No, he couldn't make excuses for himself just yet.

"Come on. We'd better clear off." Greatrex, still fuming, spoke brusquely.

Chris followed the Wing Commander as he strode along in silence. He noted his friend's clouded brow and pursed lips. He believes I'm yellow after all, Chris thought unhappily. What can I say to him that he would understand?

The drive to Theobalds Road was equally strained. The Wing Commander stared determinedly out of the car window. Chris, accurately reading his thoughts, found himself unable to speak a word in his own defense. He felt utterly

miserable at this barrier that he sensed between his new friend and himself. The uncomfortable journey came to an end at last, and Greatrex suggested, perhaps a trifle more brusquely than he intended, that since Chris was tired and had a headache, he had better get off to bed. Utterly wretched, Chris, with a barely audible "Good night," turned away and made for his own bedroom.

Sir George Benson was still at work in his office when the Wing Commander sought him out. Without asking, he saw that something was amiss. At his invitation Greatrex plunged into an account of what had occurred at Battersea, concluding with an expression of his misgivings

about Chris.

"You see, Benny, if the kid really has a yellow streak, he'll start squealing when the time gets near for the blast-off. It would be useless trying to force him to go, the whole project would be ruined, and things would be really serious."

Sir George showed his concern. "He's always seemed to me to have plenty of courage," he said slowly. "No one tried to press him to take on this job in the first place. He was anxious and eager to do it, though I explained the risks to him."

"Perhaps the glamor and adventure of it all attracted him," Greatrex put in. "If so, they wont be enough to hold him when the danger of it really dawns upon him. What are we going to do, Benny?"

For some time, Sir George's brow wore a worried frown. Then quite suddenly his heart rifted as an idea occurred to him.

"You know, Whiskers, there's another possible explanation of Christopher's conduct. I hope and believe it's the right one."

"What's that?"

"Well, suppose the kid knew what he was up against from these young hooligans. And suppose he had resisted them to 82

the best of his ability. What do you think would have happened?"

"I expect he'd have had a bit of a bashing."

"Exactly. And if it was anything like as bad as these young brutes dish out sometimes, Chris might have been hors-de-combat for some weeks. Then where would we have been?"

Greatrex pondered. "I see. You think the youngster submitted to the bullying rather than run the risk of being injured by them and so jeopardizing our plans?"

"That's it. I think he deliberately swallowed his own pride because he knew how important it is that nothing happens to him during the next few

weeks."

"Benny, I believe you're right. It's been pretty ghastly thinking the kid was a little coward. I'm damned sorry I didn't see it like that at once. Let's go up to him."

"In some circumstances it takes a great deal of courage to be a coward," Sir George remarked. "Lead the way."

It was, however, not the Wing Commander but Sir George who knocked and entered Chris' bedroom first. The boy was in bed—pale, dry-eyed, utterly miserable. As the two men came in, he looked up wonderingly. Benson's heart was touched.

"Chris, lad, I think I understand," was all he said as he sat on the side of the bed.

For a moment the boy looked at his two friends. Then his control gave way and his small body was suddenly shaken with great, deep sobs. The two men looked at each other in genuine distress, and Greatrex walked around the bed and sat himself on the other side. Awkwardly he took Chris' hand and gave it a great squeeze as the tears began to flow. No other word was spoken. None was needed. In a short time Chris reached for his handkerchief and with an apologetic little smile wiped his face. The incident was never referred to by any of them again, but from that time the

mutual regard and affection of this strangely assorted trio continued to increase.

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hapter Nine

The pilot who had taken him on his previous flights was waiting for Chris as he arrived with Greatrex at Farnbor-ough on Wednesday morning. After the greetings, the flier explained that they were going to experience a short period of free fall.

"Ill put the bus into a steep climb and let her show all she's got," he said. "Then I'll cut the throttle right down but well continue to climb under the momentum we've attained. Of course gravity will start to slow us down

immediately, but for twenty to twenty-five seconds we shan't feel it. That is because everything about us will be slowing up at the same rate. It's just the same as if we fell from a great height with everything falling at the same speed—except that it's in reverse."

Chris remembered that Sir George Benson had described this maneuver during that momentous interview in Mr. Berry's study about three weeks before. (Was it really only three weeks?) He had said that it was not at all unpleasant though very strange at first. Chris expressed his keen desire to see what it was like.

As soon as they were above the cloud layer, the pilot

pushed the nose of the plane up a little. At the same time

he opened the throttle. Chris felt himself pressed tightly on

his seat as the plane built up speed. Then the nose went up

still farther until it reached what Chris guessed was the maximum angle of climb. Simultaneously the pilot forced the plane to its maximum speed. For a short time Chris felt the same sensations that he had experienced on the centrifuge. Quite suddenly the pressure ceased. The throttle had been closed.

For the moment Chris wondered what was happening, then he received a reassuring wave from the pilot. At that instant he noticed that he could not feel the seat into which a moment before he had been forced. As he had been getting into the plane, Greatrex had handed him a tennis ball and suggested that he keep it on his lap. Now Chris gazed at the ball in amazement. It had risen up and was now poised like a tiny balloon about a foot in front of his face. He stretched out a hand to seize it. Again it was a most peculiar sensation. His hand had not gone where he had wanted it to go. Instead, he found his arm raised above his head. It took several attempts before he could touch the ball. Even then it eluded his grasp and floated gently away.

It was all over very quickly. The pilot opened the throttle once more and Chris again felt the security of his seat. The ball had fallen somewhere out of sight. As the plane leveled off, the pilot turned to him with a grin. Chris

responded with a "thumbs up" sign. He had had his first dose of free fall—and it hadn't been at all bad.

Three times during the day Chris repeated this experience. On the second trip Greatrex, at the suggestion of Sir George, provided Chris with a nut and a bolt with the instruction that he should try to screw the nut onto the bolt during the period of free fall. This Chris found impossible to do; he had too much difficulty in controlling the movements of his hands. On his last flight, however, he did manage it just before the pilot switched the throttle on again.

After each trip Chris reported fully to the Wing Commander, who noted down what he said. The maximum time

in free fall had been twenty-seven and a half seconds, during the third flight. This was about the limit it was possible to reach by this means and was only a small fraction of the time Chris would have to be in free fall during his actual rocket flight. Nevertheless the experience was very useful and served to remove any fears he had about this condition. He expressed his willingness to repeat the operation as often as possible. So it was fixed up that he should come flying whenever he could. Greatrex informed him that next time he would be asked to undertake some form of mental activity such as simple problems of addition and subtraction that also involved the use of a pencil. That night Chris went to bed in a very different frame of mind from the one he had been in the previous evening.

Tolworth again. The suit was one hundred per cent finished. Chris spent some time in it, performing a number of movements at the instructions of the scientist. At last Sir George was completely satisfied and signed a receipt for it. The oxygen supply, temperature control, pressure compensation and communication—now completely built in and battery operated—were all thoroughly tested and approved. One of the technicians, Mr. Winthrop explained, would be available until Chris and members of Sir George's staff had become completely familiar with everything about the suit. Where would the scientist like it sent? Farnborough? Certainly. It would be delivered that afternoon.

Lunch, taken on their return to Theobalds Road, was a lighthearted affair. Benson was in the best of spirits, for his plane was to leave London Airport that evening to carry him to his beloved Research Establishment. Chris and

the Wing Commander caught the mood of their friend and a share of his enthusiasm. Then they all adjourned to Sir George's office for a final conference.

The instructions which Sir George left with Chris, Greatrex, and Dr. Saunders who had joined them were lengthy

and detailed. Each was provided with a typed copy so there would be no mistakes. Carefully Benson explained everything and concluded with the final command—that Chris and the others would follow him to Woomera in exactly seven days' time, on Thursday, August sixteenth.

At last the session came to an end, and no one had any more questions to ask. Benson made his farewells, an arm around Chris' shoulders betraying the warmth of the feeling that had sprung up between them. Papers were gathered up and the others left Sir George locking up his brief case as they went down to the dining room for tea.

Chris feared that things might be a little flat after his friend had gone, but he was completely mistaken. The next week was a period of such intense activity that he had little time for anything but the completion of Sir George's program. The centrifuge, the G-suit, visits to the observatory, more flights in free fall—all followed in rapid succession. Then one night Chris realized with a sense of shock that the next day would be his last in England for—well, for some time.

Mrs. Ingall had written several times to her nephew and he had sent letters back to her. Once Chris suggested that he would like to run up to Norton to see her before he left the country, but the Wing Commander advised him against it because of the emotional strain involved. Chris accepted this polite veto with good grace.

On his last day in England Chris underwent another thorough medical examination by the same team of doctors he had met on his arrival in London. He was pronounced completely fit, in spite of the strenuous time he had had. The rides in the gondola of the centrifuge, up to an acceleration of eleven "g," had proved the efficiency of his suit, since no serious ill effects had resulted. There had been a certain amount of discomfort, but this Chris had accepted as part of the job.

One interesting discovery was made during Chris' periods of free fall. He had had no difficulty in doing mental arithmetic, which was rather surprising in view of the experience of most of the adult pilots. The hardest thing, he found, was the performance of simple mechanical actions. Even in this he had rapidly learned to control his movements until he had achieved quite a fair measure of success.

Cloudy skies had prevented any direct observation of the moon, though it was now in its last quarter and the terminator had moved past the region in which he was interested. Dr. Saunders continued, with the aid of excellent photographs and maps, to help Chris make himself absolutely familiar with the lunar geography around Pico.

Apart from the medical examination, Chris and Greatrex were free to spend their last day in packing for the journey. The G-suit was packed by the makers so it could go with them on the same plane. Teatime saw all preparations completed, but with several hours still to go before they were due at London Airport for their departure. The Wing Commander wondered whether Chris would like to go to a movie, and Chris agreed. He was feeling restless; inactivity might allow his thoughts to wander in a direction from which he was determined to keep them.

The two friends both enjoyed the comedy film they saw, though after it was over neither would have been able to say what it had been all about. Chris was glad to note that they would have to hurry to reach the airport in time.

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hapter Ten

After an uneventful flight lasting just over two days, Sir George Benson was once more in Australia. On the last lap of his journey to Woomera he became increasingly preoccupied with the security problem that he knew would be facing him on his arrival. As the plane neared the small airfield especially constructed for the Research Establishment, Billy Gillanders waited there. He was looking forward to the arrival of his chief with growing relief. Not that he shrank from the responsibility of carrying on the Establishment, but in this wretched leakage question two heads would be better than one. Besides he was consumed with curiosity about the reason for all the modifications that were being made to the rocket, and

particularly the introduction of the contour couch.

The greetings that took place between the two men were evidence of their warm personal friendship. Billy then whisked his chief off to his home where Helen had a bath and a meal ready. It spoke volumes for his consideration for the newcomer that he did not ask him a single question until they were safely entrenched in Billy's office some little time later.

"Now, Benny, what's cooking?" the Deputy Director asked as soon as they were settled.

"Perhaps you'd better give me the dope about this security leak first. Any progress yet?"

Gillanders gave Benson a full report of how things stood and of the steps he had taken on the advice of the Scotland Yard officer. Benson nodded his agreement. He admitted

that for the moment he was unable to suggest what else could be done. No evidence of a further leakage had become available since Billy had split his men up into groups and had sectionalized the data he had given to each. Meanwhile vigilance had not been relaxed, but no positive clues had been found.

Sir George commended his deputy on the subtlety of the information he had given the various groups. It had enabled them to carry on with their respective tasks; but while the main items were really false, they had appeared to be of great importance so that the spy would feel compelled to pass them on in spite of the risks he now knew himself to be running. Benson agreed that it would be infinitely more difficult to repeat the process for the next stage of elimination if the present one proved successful. Which brought the two scientists to the burning question in Billy's mind-why were the modifications being made?

After emphasizing that absolutely nothing of what he was about to say should, at this stage, go beyond the two of them, Benson gave his friend a long and detailed account of the dramatic events that had taken place during his visit to London. He began by describing the mysterious domes which had appeared near Pico, and told of the government directive that everything must be done to discover their nature. He reported how it had been decided that the only way to obtain further information was to observe

and photograph them from beyond the earth's atmosphere; and how, owing to the impossibility of constructing a larger rocket in the short time available, he had been compelled to find someone small enough to be carried in the existing projectile.

Billy listened in silent concentration to what his chief had said, but when Benson stated that he had found a small person to fit into the rocket, he could contain himself no longer.

"But who the blazes have you persuaded to go?" he asked.

Sir George paused for a moment before replying. At last he spoke with careful deliberation.

"I have invited, with official approval, a boy of seventeen. He is a clever young man, with a sound background of physics and math, and a keen interest in rocketry. Moreover, he is small for his age, somewhat less than five feet tall. In the presence of his headmaster I explained the risks, and I have no doubt in my mind that he fully understood all that was said to him. We gave him time for reflection and he decided that he was willing to take the risks. Consent was obtained from his legal guardian, and he has since been undergoing an intensive training and briefing for the task. He is the guest I have asked you and Helen to accommodate. He will be here in about a week's time."

"Whew!" breathed Billy. "The youngster must have pluck —or else he doesn't understand what he's in for."

"He knows all right. He's one of the gamest kids I've ever met. I believe you and Helen will like him as much as I do. Now, Billy, I know it's going to be difficult, but I don't want you to tell even Helen what young Christopher is really here for. Of course toward the end a number of people will have to know, but I want this postponed for as long as possible."

"You think that if it became general knowledge, some attempt would be made to prevent this flight?"

"I'm sure that if there's anything in the possibility that these domes are the work of the Russians, we shall have to look out for real trouble, and the vital key to it all would be this boy."

"I see. You think the easiest way to prevent this investigation would be to harm the lad?"

"That is a strong possibility. We shall have to look after him very carefully, because we couldn't replace him in any-

thing like the time we've left. I know that Helen will look after his physical comfort. It's up to us to give him adequate protection."

"What have you planned for Christopher—that is his name?—to do when he gets here?"

"Well, the main thing will be for him to familiarize himself with the inside of the rocket warhead—we ought to call it 'cabin' soon—together with the instrumentation. As you know, the whole layout has been altered and a number of optical instruments are following along for inclusion."

"How are we going to do this without letting the cat out of the bag completely? Won't the other chaps think it strange if this youngster's allowed to prowl about the rocket while all other people not directly concerned are kept outside the fence?"

"I admit that's a difficulty. Of course we can postpone his actual close contact with the projectile—apart from an initial visit which you and I can conduct—until about a fortnight before the firing. Perhaps then we shall have reached the stage when it won't be possible to conceal the real object of the operation any longer. We shall be on our toes to protect Christopher. I wish to God we could find the traitor before then!"

There followed a long and technical conference in which Billy gave Benson a detailed account of all the work that had been done since he left and particulars of the modifications that his staff had already carried out. From time to time Sir George consulted memoranda he had brought with him from London. At last he expressed himself satisfied with the progress that had been made.

"We shall be ready to fire by the proper date, it seems. Of course we still have a great deal to do, particularly after the new instruments arrive. Some laddies from the makers will be coming out with them to assemble and fit. Now you've divided our own chaps up into teams, it will prob-92

ably help us to keep things under our hat a little longer if we let the optical specialists form a team of their own."

Benson spent the whole of the next day out on the firing apron where he meticulously examined every detail of the work that was going on. As he greeted his staff again, he was quick to notice the air of tension and restraint—a strong contrast to the atmosphere of cooperation and good-fellowship that had existed before his departure.

At various times Billy questioned his chief about the boy who had volunteered to be the first human being to venture into space. He found Sir George eager to talk about Chris. The two men agreed that it would be an advantage if Chris became Sir George's "nephew" for the time being. This would avoid the necessity for a number of explanations; it would also be the apparent reason why he would be receiving rather special attention.

So it was that the Deputy Director informed his wife and daughter that the guest they were expecting was Christopher Godfrey, nephew of Sir George Benson, aged just over seventeen.

Helen and Betty Gillanders now had one of their many questions answered. But there were still several more. Strange that Sir George had never mentioned this nephew before, they said; though it was true that he rarely talked about his family. Why was he bringing him out to Woomera just when things at the Establishment seemed all at sixes and sevens? What would they do with him when he arrived? How would they entertain him? Would he be a good mixer? In spite of repeated questionings, Billy could not—or would not—give them any information.

Betty was particularly intrigued about the forthcoming visitor. Would he be a prig, or would she like him? And, more important, would he like her? After all, he was over seventeen and a relative of Sir George's, so he was probably a very personable young man. Would he be good at games

like cricket or tennis? Getting to know him would be very interesting. She would be the envy of her other girl friends, with this intriguing stranger coming to stay in her home. Mother and daughter discussed their visitor; Helen busied herself in preparing his room, and Betty spread the news among all her friends. Christopher Godfrey must be the son of a sister of the Director, she decided. And he would be arriving in less than a week!

It was on Sunday morning, August nineteenth, that Christopher first set foot on Australian soil. Wing Commander Greatrex had been a pleasant and informative companion. Neither had referred to the rocket flight during the trip and Chris was able to enjoy to the full the thrills of the journey. As the plane touched down he could see Sir George waiting near the runway.

Benson greeted his young friend warmly and made suitably disparaging remarks to the Wing Commander. On the plane flight to Woomera Benson explained to Chris the arrangements he had made about his accommodation and also their new relationship. Of course there followed an exchange of pleasantries between Chris, Greatrex, and "Uncle George."

Billy Gillanders and Helen and Betty were waiting at the Woomera airfield. They had looked forward with growing excitement to greeting their guest. Helen, naturally hospitable, was anticipating having the Director's nephew stay with them. Betty, even more excited, had already built up a picture in her mind of what the young man must be like. Billy was concerned with the personality of this boy whom he alone knew to have so much courage.

As the plane came to a halt, the party moved forward.

Betty was having difficulty keeping the ladylike demeanor

she had determined upon. One of the ground staff ran out

with the portable gangway. First to come out of the plane

was Sir George Benson, quickly followed by Wing Commander Greatrex. Then came Christopher.

For a few moments Betty stared incredulously at the small, slight figure of the boy as he came down the gangway steps. Then for some unaccountable reason she felt an almost irresistible impulse to laugh. Surely this little figure wasn't the nephew of the handsome Sir George! She refused to believe it. Yet here was the Director introducing the incredible creature to them as his nephew, Christopher Godfrey. Helen had felt the same amazed surprise as had her daughter. Somehow she had never pictured the Director's nephew as someone so insignificant. However, politeness overcame her surprise as she murmured her greetings. Betty, less able to control her emotions, shocked her father by bursting into uncontrollable

laughter as she shook hands with Chris.

The boy's face flushed. Often in the past he had encountered ridicule from young people who were taller than he, but the last few weeks had made him almost forget this source of embarrassment. Indeed it was his small stature that was enabling him to perform a service that no one else could. Yet here, once more, was that hateful mirth that his size seemed to cause.

For a moment there was an awkward pause, then Greatrex, quick to size up the situation, ended it by boisterously picking Helen from her feet and planting a resounding kiss on her cheek. The party moved away together, talking with a little more animation than was natural. While they were walking along, Billy Gillanders was observing Chris closely. Knowing the purpose behind his visit, he felt nothing but admiration for this youngster who was to do a thing he would not care to do himself. Billy felt acutely uncomfortable at the way his daughter had greeted their guest. He resolved to have a stern talk with her. How different her

reaction would have been had he been allowed to tell her the real reason Chris was with them!

In the whirl of the conversation, Chris had little time or opportunity to reflect on Betty's behavior. She, for her part, studiously kept her face averted, though Chris fancied more than once that he detected barely suppressed laughter. They soon reached Billy's comfortable house where Helen had left a meal ready.

After eating, Billy suggested that Chris might like to see some of their little town, and wondered whether he would care to let Betty show him around. Before Chris could reply, Betty jumped up, saying she was not feeling well and would like to be excused. Her father bit his lip in vexation, for it was plain to him that Betty was simply making an excuse to avoid going around with their guest. So Billy said he would take the boy around himself. Rather unhappily, Christopher accompanied Mr. Gillanders on a tour of Woo-mera.

Billy found himself intrigued. Knowing a little about Chris, he was under no illusions as to the qualities of his new friend. He found Chris intelligent and responsive, and he set himself out to make up for the hurt he knew Chris must have felt at Betty's treatment. He frowned as he remembered it

—Helen's rather cool attitude, too. Perhaps both of them felt the contempt that tall people sometimes have for anyone so much undersized. How sorry he was that he could not tell them more! He was sure that they would regard matters in a very different light if he could only reveal what this courageous youngster had taken on.

For his part, Chris, feeling the goodwill that his companion had for him, managed to forget his earlier distress. However, it came back to him in full measure as he returned to the house where he was to stay for the next few weeks. How he wished that he were to live with Sir George or the Wing Commander! He supposed that he had been put with 96

a family so that he could be happy and well looked after. It didn't seem as if it was going to turn out like that. He would have liked to have been friends with the tall daughter of the house, but it seemed this was not to be. That night Christopher lay awake for quite a long time.

Next morning Chris asked Sir George if it would not be possible to find him accommodation elsewhere. Sir George looked exceedingly troubled.

"I noticed that young girl giggled at you, Chris, lad. But don't take it too seriously. I'm sure Mr. and Mrs. Gillanders will make you welcome, and I don't want to upset them by taking you away, so see how you go on for a little longer."

"All right, Sir George. But I know she thinks I'm ridiculous. Mr. Gillanders is a good sort, but I don't know whether or not his wife's laughing at me, too."

"Surely not. Of course, neither of them, or anyone else, would laugh at you if we could only tell them about the work you've come here to do. We can't just yet, but I'll jolly well let them know just as soon as I can. Now there's something else that I want to talk to you about. Well wait till old Whiskers joins us, for I want him to hear it all."

A few moments later Whiskers joined them, and Sir George continued.

"A serious leakage of information about all that's happening in this Establishment has been taking place for some months. In spite of strenuous efforts it has been impossible to discover the culprit. We believe, however,

that it must be a member of the staff here, and we have taken certain steps to minimize the amount of data available to any one man. I should be failing in my duty to you, Chris, if I didn't tell you that in my opinion you will be in very great danger once it is known that you're to take that trip in the rocket. You see, if our suspicions about the nature of the Pico domes are anywhere near the truth, we can expect most vigorous action to prevent us from definitely finding out. Naturally

you'll be one of the main targets for the traitor's attentions, for if you're put out of action the whole project is hamstrung. Now you see why I'm putting off till the last possible moment the information that you'll be inside the warhead of that projectile.

"Naturally there has already been a great deal of speculation among the staff here as to the reasons for all the alterations that have been made to the instrument layout. I've ordered a couple of large apes to be brought to the station, and I've arranged for it to be said that the next firing will carry one of them on a contour couch in order to simulate as nearly as possible the conditions which any human being will experience when that stage of our development is reached. Not until it is impossible to delay knowledge of the real object of the preparations shall we announce that you are to be the first passenger into space."

"How long do you think you'll be able to put off telling the world that Chris is going in the rocket?" asked Greatrex.

"It won't be a question of 'telling the world,' but only a very few of the chaps at work here. They'll have to know, of course, because of the recording instruments we shall be setting up in control here. After all, not even an intelligent ape could be expected to operate the optical gadgets that are the vital part of the whole job. You see, the instrument that you, Chris, will be pointing at Pico will be a telescope, television camera, and astronomical camera all combined. The optical boys will be looking after the rocket end of the instrumentation, but our chaps will have to fix up the receiving end down here."

"I suppose I'll be under armed guard again," Chris put in.

"Not exactly, but I thought it right to let you know just what we're up against so that you can keep your eyes skinned for anything that looks at all

suspicious."

While this conference had been going on in the Director's office, Billy and Helen had been having a serious talk.

"I could have spanked Betty for the way she behaved to Sir George's nephew," the Deputy Director was saying angrily.

"Of course it was very wrong of her, dear. But you must admit that he's nothing like what we expected—not a bit like what I would have expected a nephew of Sir George to be. I'm sure she won't be rude again, but I doubt if she'll ever like him. Betty's a bouncing, athletic type, with no time for anyone who doesn't come up to her own standards."

"That may be, but I think she'll have to be more polite to him in future."

"You seem to have taken to him, Billy. I wonder what you can see in him that we can't?"

"So you're not very impressed with him, either?"

"I must confess that I'm not. However, I'll do all I can for him for Sir George's sake, if not for the funny little boy himself."

"Helen, you're doing him a great injustice. I'm sure that when you get to know him better you'll like him."

"It hasn't taken you long to take his part. I doubt if I shall ever feel very enthusiastic about him. But don't worry, darling; and you'd better run along or you'll be late for the office."

Billy started the day's work in a disturbed state of mind. How different would have been the attitude of Helen and Betty had they known all about young Godfrey! Still, this was probably only a foretaste of the difficulties his presence might cause while he retained the status of mere visitor. He voiced his misgivings to Benson when they met, and both expressed concern about the effect that any hostility toward Chris might have on him. They certainly didn't want an emotional storm at this state of the operations. But it was a risk they would have to take, Sir George decided, and he expressed confidence in Chris' common sense.

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hapter Eleven

On Monday afternoon Christopher had his first sight of the rocket that was to mean so much to him. With Sir George, Billy, and Greatrex, he passed through the wire barrier and entered the sacred ground. Soon he could see the tall, silver shape of the graceful projectile. The symmetry of its contour, however, was marred by the cranes and gantries with which it was surrounded and by yawning gaps at several places in the sides. In spite of these blemishes it was still possible to detect the underlying design. The tall cylindrical body rose from four diametrically opposite fins. The nose section was not in position, but the last ten feet or so of the rocket led in a gradual taper to where the nose would fit. Several men were at work on an open section near the top; some were inside the casing; and one was on the gantry outside.

As the little party approached, several of the scientists and technicians paused in their tasks to comment on the presence of the boy. Word had gone around the Establishment that the Director had his nephew with him. Those watching the little party standing near the rocket drew the obvious conclusion. Many eyebrows were lifted at this relaxation of the ban which kept all other families and friends beyond the barrier. Rodd, who was working with Halifax in the nose section, remarked that what was sauce for the goose was apparently not the right kind of trimming for the gander.

Both Sir George Benson and his deputy shared the welcome task of describing and explaining the missile to Chris-100

topher. His fascination at this glimpse of the object he had dreamed about absorbed his mind so completely that it blotted out any morbid thoughts of what might he in store for him within this very rocket.

The party walked around the base several times, then Sir George led the way up the steps of the gantry which surrounded an aperture about halfway up the shining side. This opening was rather larger than the other two that Chris had noticed. As he came level with it, he saw a mass of tanks and pipes that held and distributed the fuel and oxidizer. Someone—twisted in an impossible position—was at work in the midst of this conglomeration of fabricated metal.

The four of them crowded around, peering inside as much as they could. Chris found the complicated mechanism of valves, pumps, wires, and tubes infinitely exciting. Here was the very heart of the rocket that would soon take him where no man had been before. Here was the product of months of labor, skill, and brains—mans challenge to the forces of nature; mans effort to burst his earthly bonds.

At the request of the Director, one of the scientists on the gantry—it was Campion—pointed out to Chris the various parts and explained their functions. With some difficulty Sir George convinced Christopher that there was still much to see, and Billy led the way to the topmost section. This was the part in the tapering nose which would contain all the electronic equipment, the "brain" of the projectile.

Here the aperture was smaller, and only one person at a time could peer inside. It was here that Rodd and Halifax were at work supervising the installation of a mass of delicate equipment. And this was the part where Chris himself would be during the flight. At the previous request of his "uncle," Chris was looking at this part of the rocket with particular attention, for he would not be able to visit it again until the secret was out.

Sir George had warned Chris that he would not be able to learn much here. Into this vital section was going all the most secret equipment. It would be stretching things too far if he were to request the two scientists to describe it to a young stranger, even though he was supposed to be a close relative of the Director. He knew that later on he would be thoroughly briefed in all that it was essential for him to know.

After they returned to the ground and were walking away, Chris asked about the top of the nose, which was missing. Benson explained that it would not be fitted until almost the end of the preparations, for this was the most secret part of all. Unlike previous models, this rocket would have a transparent nose, complete with optical instruments. Only when everything was ready for this to be added would the reason for Chris' presence be revealed.

Sir George, Billy Gillanders, and Greatrex were discussing with animation the things they had just seen, but Chris dropped into a thoughtful silence as they walked along. Perhaps, if this flight were successful, he too could someday take part in the construction of a similar fantastic piece of

mechanism. Perhaps by then satellite vehicles would be commonplace. How fortunate these people were to be engaged on this venture which would push man's knowledge and his frontiers forward! They seemed decent fellows, proud of their skill, keen on their job, bronzed with work in the open air. Not one of them looked like the popular conception of a scientist—thick glasses, narrow chest, stooping shoulders. Chris realized that physical fitness as well as academic qualifications had guided the selection of the staff for this isolated outpost. Surely none of these men could be a traitor, Chris mused as they walked along. Yet both Sir George and Mr. Gillanders seemed to think that this was so. But who?

Among the men engaged on the rocket, comment was

general after the departure of the Director's party. Surprise was expressed at this breach of the security regulations in showing around Sir George's odd little nephew. No one had ever been able to accuse Benson of favoritism before, but now it seemed that he was prepared to ignore his own strict instructions when it suited him. Rodd and Halifax discussed this as they worked together. Halifax remarked that now that they had been told that there was a spy among them, with each man wondering who it was, it was even more strange that any outsider should have been allowed this close inspection, even though he was only a youngster.

The next few days dragged along very slowly for Christopher. Both Sir George and Mr. Gillanders were extremely busy within the restricted area, which he was not allowed to enter again. His constant companion was the Wing Commander, and their voyages of discovery about the area in a jeep compensated a little for the unhappiness Chris felt in the Gillanders' home.

Mrs. Gillanders was polite and considerate to him, though Chris suspected that she shared more than a little of her daughter's sentiments. As for Betty, though she was not rude to him, she avoided his company whenever possible. One evening Mrs. Gillanders gave a party to which about a dozen young people were invited. It was Billy's suggestion; he hoped that Chris might meet someone of his own age with whom he could be friendly. From Chris' point of view, the party was not a success. The young people, both boys and girls, seemed to regard him with curiosity tinged, he thought, with a faint contempt. Only one girl seemed more friendly than good manners demanded. Chris wondered if this was because she, too, was smaller than the others and seemed a little apart from them. Several times Chris and

Anne found themselves engaged in friendly conversation. Christopher told the girl something about his life

in England, while she described her life in Australia. Yet, altogether, the party was not a happy one for Chris.

Every Friday morning the weekly freight train arrived at Woomera. Most of the personnel and light equipment arrived by plane, but the heavier things were brought in by rail. Early on Saturday morning the engine and its string of empty cars would chug away south, to return full again the following week.

On the first rail delivery after Chris' arrival four cases came in marked for the personal attention of the Director and his deputy. These were immediately placed in strong storerooms to which only the two chief officers had keys. On the same day the three optical experts arrived. They were soon fully briefed on the situation by Sir George. As a result, their quarters were separated from the rest of the staff, and they received very strict instructions to keep the nature of their part of the work on the projectile a close secret. This segregation and secrecy, perhaps inevitable, caused the newcomers to be regarded by the old hands with a certain amount of hostility. This made life a little uncomfortable for the optical men, but it helped preserve security.

The two apes arrived by plane. On several occasions monkeys had been placed in the nose of rockets where special quarters had been built for them within the restricted area. A few of the monkeys that had made a flight into space and had returned unharmed were now housed in a miniature zoo in the town. Each was named and regarded with affection by everybody. Naturally the arrival of the apes soon became known—as Benson wished it to be—and everyone looked forward to the apes' safe return from this next firing and their transfer to the zoo.

Among the families of the scientists there were the usual animated discussions as to whether animals should or should not be used for these purposes. On the evening that the apes 104

arrived the debate was renewed at the evening meal of the Deputy Director's family. Billy, of course, was all for the use of animals so long as

it was humane and in the interests of science. Betty and her mother took the opposite view. The arguments were good-humored but warm.

"It doesn't hurt them a scrap," Billy maintained. "There's nothing wrong with Sophie, Jim, or Jacko, and Albert has been up twice."

"Some of them weren't all right, though," put in Helen.

"No," Bill admitted, "we've lost only one monkey. In his case it was due to unforeseen circumstances which we took care of the next time. Every trip, the danger is less than before."

"But why are you going to shoot up these two poor creatures?" demanded Betty. "Surely you know all you want to know? I think it's cruel. I wonder what their feelings must be like when the rocket takes off."

"We always give them an anesthetic before we put them in," Billy answered, "so they don't feel a thing."

"And will these two wretched apes have an anesthetic, too?" Helen asked.

Billy swallowed hard. Here it was!

"Er—no. You see, we want to try out the contour couch, so the next occupant will be fully conscious."

Both Betty and her mother looked shocked.

"I think that's real cruelty," Helen burst out warmly. "I never expected to see civilized men treat dumb animals like that."

"We have to find out something which we can only do with a fully conscious subject. Everything will be done to reduce the discomfort as much as possible."

Chris listened to the conversation uncomfortably. Mr. Gillanders had avoided looking at him, and Chris guessed that he, too, would be glad to escape. What would Betty and her mother say, Chris wondered, if they knew the truth?

Would they be as concerned about him as they were about the apes? He

listened as Betty had the last word.

"I think it's shameful to do this to the poor creatures. You're all too scared to do it yourselves!"

Before going to bed, Chris took his usual short stroll. Mr. Gillanders joined him.

"We shall have to put up with a good deal of that, I fear," he said to Chris as he thoughtfully puffed at his pipe. "But we mustn't be tempted to tell them the truth until Benny gives us the okay. Sorry about it, Chris, but what can we do?"

"I know, Mr. Gillanders. It's hard for everyone. You and Sir George have to keep up this fairy story about the apes and appear to be completely heartless. Perhaps it's not quite so bad for me! I'd rather it should be this way than to have the fuss I'm scared they'll make when they know it's me and not their dear monkeys who'll be on that contour couch."

"Ah well! The lot of the pioneers was ever hard," sighed Billy as they walked along in the darkness.

Chris had soon become fairly familiar with the layout of the small community, and he knew they were near the railway siding where the engine and its string of trucks lay waiting. In a few hours it would be chugging its way south to return the next Friday morning. A small feather of steam from the engine indicated that the fires had been damped down for the night. They would be brought quickly up to a roaring heat when the driver and fireman returned with the dawn.

For a moment the two companions paused while Billy applied a match to his pipe. It was now quite dark and Chris could barely make out the outline of the railway cars. As he gazed at them idly while his friend was lighting his pipe, Chris thought he saw a slight movement near the third car from the engine. In a moment it was over, leaving Chris not quite sure whether it had been merely a trick of the 106

imagination. At best it had seemed only like a change in the shape of a black shadow. But shadows shouldn't change their shape. Still—perhaps there was nothing, and it would look silly to tell Mr. Gillanders he thought

someone was moving about near the train. As they walked along, Chris glanced occasionally in the direction of the cars but he saw nothing more. He was glad he hadn't told his companion, who might have thought he was getting jumpy.

The next day was Saturday, August twenty-fifth. That morning an urgent conference took place in the Director's office. Present were Sir George, Mr. Gillanders, the C.I.D. officer, and a newly arrived stranger. The air was tense. Benson paced the floor, Gillanders' face was flushed, the police officer wore a worried frown. Only the newcomer seemed calm. He had brought news to the others of another leakage of information. This time it was the specially planted data that Billy had deliberately handed out to one of the groups—that consisting of Rodd, Halifax, Campion, and Priest. So the traitor was one of these four! Unless, of course, one of them had disobeyed the very strict instructions to keep the information within his own group.

For some time Benson had accepted the theory that the spy was one of his own staff, but now that the field was narrowing it had become a matter of personalities. He had known the four men now under suspicion for several years. It was hard to believe that one of them was a traitor to his country. Which one, though? And—what to do next?

Billy Gillanders broke into Sir George's train of thought.

"I'm just wondering," he said, "how on earth we'll split up this four if we're going on with my original plan. It's these chaps who are doing all the electronics, and it's practically essential for them to work together now that we're getting so close to the firing date.

"Of course the devil of it is that unless we find out which of these four—if we are sure it's one of them—has been sell-

ing us out, we run the risk of the whole show being sabotaged at the last minute. Any of the four has the opportunity of throwing a wrench in the works, and we shouldn't know until it was too late to put the job right."

"When did you propose to reveal your final plans?" asked the visitor. "I mean about young Godfrey."

"I had worked it out," the Director answered, "that we shall want a minimum of fourteen days before firing day in which to do all the work involving our passenger. As you know, we're due to blast off on September twenty-ninth or thirtieth. That means that we have less than three weeks in which to find the spy before we're compelled to put all the cards on the table to the members of the staff here. If we haven't found the spy by then, I fear that our passenger may be in serious danger."

"If it will help, I've power to authorize you to launch the projectile at any time between September twenty-fifth and October fifth. This will give you a little more latitude. The fixing of the actual date is to be left entirely to you, Sir George." The visitor made a move to depart. "London will be in constant touch with you, and you will be informed later about the official observer from the Cabinet who will be coming to witness the firing. If there is anything we can do to help, you will, of course, let us know."

The C.I.D. man went to escort the visitor to his plane and Benson and Gillanders found themselves alone.

"Billy, on thinking about it," Benson began, "I just don't think it's practicable to split up those four chaps without seriously hindering progress. Besides, if we did, it would warn the guilty party immediately that we were closing in. I think that within the next few days we shall have to drop, apparently by accident, a separate piece of information to each of the four. When we realize we've said more than we intended, we shall have to request secrecy from each of them in turn. What do you think about that?" 208

"I agree. Frankly, although it was my scheme, I was worried about carrying out this splitting-up process any further. As youve seen for yourself, the atmosphere isn't too happy. I think it would be best from all points of view to adopt your modification. But what information shall we let out?"

"To my way of thinking, we've got to take a risk here. We're too near the final stage of the project to cook up any phoney stuff. It's got to be the real thing. Under the circumstances I don't mind what we drop, so long as we preserve the fiction about the apes and protect Christopher as long as possible."

"Talking about Christopher," Billy said, "what do you think about getting

him away from the Establishment for a few days? He's got to cool his heels for some little while yet, and time will drag along very slowly for him. I had hoped that Betty would be friendly with him, but you know how things are in that direction."

"Yes. It's a great pity, but we can't help it now. Perhaps a change would be good for the lad. I'll get Greatrex in and fix up some more free-fall sessions with the R.A.A.F. Come in again after lunch, Billy, and we'll go over the beans we're going to spill."

So it was that on Sunday morning Chris wished his hosts a temporary good-by and joined Greatrex in the waiting plane. For the next few days he was accommodated at an Air Force station where he had a number of flights in several types of fast planes. By now he was quite at home during the short period of free-fall that these trips were designed to provide. The Station Commander, who, through Greatrex, had been taken into Sir George Benson's confidence, set Chris a number of easy mechanical tasks to perform under weightless conditions. He was able to do these with increasing facility as his experience increased, though they remained simple owing to the short duration of each

flight. On Thursday Chris and Greatrex returned to Woo-mera and reported to Sir George.

Perhaps it was because he had been away a short time, or perhaps it was his imagination, but Chris fancied that his welcome from Betty and her mother was a little more cordial than it had been previously. There was still, however, considerable strain whenever Betty and he were alone together.

A letter from his aunt was awaiting Chris when he returned, and he was delighted to know how well she had settled down with Miss Darke as her ' niece." He spent several hours in writing a long letter back, assuring her of his own happiness and health.

Work on the rocket had gone on apace. Though he was not able to visit it himself, Chris learned from "Uncle George" and Mr. Gillanders that progress was up to schedule. The men of the optical team had, in close secrecy, assembled and tested their instruments and were now only awaiting the final phase when they would receive the all-clear to fit them in the head of the rocket.

Benson and his deputy had not been idle. They had let fall a number of premature pieces of information to each of the four suspects in turn and had received assurances that they would under no circumstances be disclosed. The C.I.D. man was now able to concentrate his efforts, though none of the four gave him the slightest clue. Benson was sure that they did not suspect they were under close supervision. In fact it was probable that the information that Benson or Billy had confided made each feel that he was no longer under suspicion. London had undertaken to inform the Director immediately if any of these "plants" were known to have been passed on, and the two chief scientists awaited developments with growing concern.

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hapter Twelve

Time had begun to hang heavily for Christopher. Both "Uncle George" and Billy Gillanders did all they could to help him to pass the hours pleasantly, though their extreme preoccupation with work on the projectile gave them little time to spend with him themselves. Accompanied by the faithful Greatrex, Chris went for a number of walks in all directions across the scrub land that surrounded the Establishment. The sameness of the scenery on all of them was boring, though the excursions did provide exercise and help keep Chris very fit. There were times when even the cheery companionship of the Wing Commander began to pall and Chris missed his schoolmates a little and longed for younger friends.

The first week of September dragged along very slowly. Try as he might, Chris could not realize that in a little over three weeks he would undertake the greatest adventure that anyone had yet attempted. One night he lay tossing in his bed, the quiet darkness all about. What, after all, he thought, am I? Why should I be concerned about myself when I'm only a scrap of animated matter in a universe of infinite variety and mystery? Surely we are all utterly insignificant—unless God has chosen us for some purpose of His own.

For a time Chris lay deep in thought. Then he sat up in bed and looked through the window out into the night. All was calm and still, and the boy felt an irresistible desire to go out and drink in its peace. Quietly he dressed and, careful not to disturb the Gillanders, he went softly through the

door into the almost complete darkness beyond. Only the stars provided any illumination; they seemed to shine with double brilliance.

Curiously Chris gazed upward as he walked away from the houses. The constellations of the southern hemisphere were unfamiliar to him. Gone were the Big Dipper and some of the others he knew, and in their places were these strangers. Soon, however, an old friend—the moon—would be appearing. Chris smiled to himself at the expression "old friend." A better term would be "distant friend"; then he could say that he looked forward to making its closer acquaintance.

Christopher was walking quietly along, feeling happier than he had for days. He had not noticed in which direction he was going, but now he saw the familiar railway engine and cars loom out in the darkness, for it was Friday night.

Just as he was about to turn back, a slight sound from the direction of the train attracted his attention. He glanced idly in its general direction, then his interest quickened as he saw once more a dark figure alongside one of the trucks. This time he could not be mistaken, and it did not take many seconds' observation to convince him that this was no trick of the imagination. Curiously enough, the movement was again by the third truck from the engine. For a moment Chris pondered on what he should do. He was tempted to investigate more closely himself, but bearing in mind the danger he might be in—danger to the project rather than to himself—he decided to make his way home quietly and to inform Sir George in the morning. Even as he watched, the dark form which had been bending down by the truck straightened up, so that Chris could dimly see the figure of a man. It was too dark to make out details, but the boy could just see the curious gesture made by the man—as if he were patting back into place a lock of hair displaced when bending. For a few seconds longer Chris was able to 112

see the shadowy figure, then he became aware that it was no longer there, having melted into the darker patches around the train. He remained on the lookout for some minutes longer, but nothing more could be seen, so he returned to the Gillanders' home and quietly climbed into bed.

Next morning at breakfast, Chris asked Mr. Gillanders if he would tell Uncle George that he would like to see him.

"He's frightfully busy today, Chris," his host replied. "Is it important?"

The boy was aware that both Betty and her mother were listening to the conversation, so he couldn't explain his reason to Billy.

"Not particularly," he answered, trying to appear casual. He did manage to give the Deputy Director a quick wink which he was sure that neither of the other two had seen. Billy took the cue.

"Well, I'll see what can be done," he said, rising from the table. "Don't go far away and I'll ask him to send for you as soon as he can."

"Anything wrong, Christopher?" asked Mrs. Gillanders as soon as her husband had gone.

"Not really. I haven't been sleeping too well lately, and I just wondered if the doctor could give me a sedative," was all Chris could think to say.

"Sleeping pills!" Betty snorted. "You should get more exercise."

"That will do, Betty," her mother interrupted. "Help me to clear the table, will you?"

An hour after this unhappy little episode, typical of many that Christopher was having to experience, Greatrex appeared to tell Chris that his uncle had a few minutes to spare if he could come at once. Chris was painfully aware of the disdainful toss of Betty's head as he accompanied the Wing Commander from the house.

He found both Benson and Mr. Gillanders awaiting him in the former's office.

"Good morning, Chris," Sir George greeted him warmly. "Afraid I'm not seeing as much of you as I would like just recently. I hear from Mr. Gillanders that you want to see me. Anything wrong—apart from the trouble we cant help just yet?"

"Thanks for seeing me, Uncle George," Chris answered— the term by now seemed natural to him. "There is something I thought I ought to report to you. There may be nothing in it, but I'm sure you should know."

Christopher then gave an account of what he had seen the previous night. He also mentioned thinking he had seen something similar when he and Mr. Gillanders had been strolling near the train on the previous Friday night. The three men listened attentively. When he had finished, Sir George spoke.

"In the first place, Chris, you should not have been wandering about alone at that time. I know you haven't been forbidden to do so, but now things are reaching crisis point. I think that from now on you must never go about alone, day or night. As to what you saw, it is certainly worth investigating, and we shall take steps to do so thoroughly. There may be some innocent explanation, but, on the other hand, it may be the break we've been waiting for. I can't understand, though, why anyone might be lurking near the empty trucks. They're always searched thoroughly before the train leaves to make sure that nothing has been left inside. Still, we'll be on the lookout next Friday."

The week end passed quietly. On Sunday Chris attended the little church along with most of the small, isolated community. In the evening Mrs. Gillanders entertained Sir George and Greatrex at dinner. In spite of strenuous efforts by the irrepressible Wing Commander to cheer everyone up, the whole affair fell a little flat. Perhaps this was due to 114

the preoccupation of the two scientists, or maybe they were all feeling the strain of the uncertain future. Chris felt that this waiting period, these days of—for him—inactivity, were becoming almost intolerable. Perhaps life would be a little happier when Sir George let it be known that he was not an undersized and useless visitor, sheltering behind his uncle's privileged position! At least he would be able to get to work on preparing himself for his journey in the rocket.

Monday, September tenth. Tuesday, September eleventh. For Christopher they were days of sheer boredom; for the staff of the Research Establishment they were days of increasing tempo at work, with many petty irritations marring the hitherto friendly personal relationships; for Benson and Gillanders they were a time of growing anxiety and concern. On Wednesday morning a courier arrived and was closeted with Sir George and his deputy for nearly two hours. After lunch Chris was asked to accompany Greatrex to the chiefs office, where Mr. Gillanders was also waiting.

"Well, Chris, lad, things are moving at last. Weve received final instructions this morning, and I have set the time of launching the rockets at precisely 3 a.m. on the morning of September twenty-ninth. You can get ready for a busy time soon. I can promise that you'll have scarcely a minute to breathe. I propose to call a meeting of all the senior staff at ten o'clock on Friday morning and to inform them that you're to be the passenger in the rocket. Would you like to be present?"

Chris thought for a few seconds.

"What do you think, Uncle George?" he asked.

"I think you may as well be there. It may be a little embarrassing for you, but the plunge has to be taken, and you'll probably want to get it over with as soon as possible."

"There won't be any fuss, will there?"

"No. I can promise you that. I think the information will

clear the air tremendously, for which I shall be truly grateful. It's proposed to keep this knowledge strictly to the senior staff for the time being. The outside world will still not know for a little while longer."

"If the mysterious prowler that Chris reported has anything to do with the leakage, I should think we can count on some action for certain on Friday night," Billy put in.

"I hope so. Greatrex, old chap, you'll have to look after Christopher more closely than ever. Perhaps you'll have to save him from his friends as well as possible enemies. That's why were going to keep this thing a secret as long as we can.

"Bit risky even telling the staff about Chris when you know one of them's a spy," ventured Greatrex.

Benson sighed. "My dear old Whiskers," he said, "as you know, we've been over this a score of times. We don't know which of the four suspects is the guilty party and we just can't suspend all four."

"How about sabotage?" persisted the Wing Commander.

"There's been absolutely nothing of that nature so far," Gillanders assured him. "I'm keeping a careful watch myself on the work of each of them. They're all first-class men and all the work is of a very high standard. Naturally we'll keep a very sharp lookout for any fishy business, and I shall keep on making secret checks on the work they're doing."

"Whiskers," Benson interrupted, "I'd like you to take Chris to the city till tomorrow night. There's a plane leaving in about an hour. Any objections either of you?"

"Not from me," Greatrex grinned. "How about you, young feller-me-lad?"

"There's nothing I'd like better," Chris answered. "Then we'll really get down to work when we come back."

"The plane will have you back here by 8 p.m. tomorrow. See you behave yourselves." Benson smiled.

The two days in the city went like a flash. Greatrex saw 116

to it that Chris enjoyed every minute of the short break. It seemed no time at all before he and his companion were stepping out of their aircraft on Thursday evening. From then on he would have something definite to do, so Chris went to bed that night in a happier frame of mind than he had felt for some time.

The weather on Friday morning was dull, with an overcast sky. Chris had breakfast in a state of scarcely suppressed excitement. Helen and Betty glanced at him curiously from time to time. Billy was in a thoughtful mood.

Greatrex called for them in the jeep that he seemed to have adopted, and very soon Chris was again in Sir George's office. The table was a mass of papers over which the scientist was bending as they entered.

"Good morning, both of you," he said. "Well, Chris, how are you feeling? The chaps will be here in about ten minutes. I've let them know that this is a meeting of critical importance. I know they're all keyed up, wondering what it's all about. Just sit there quietly and see how they take it. I think you'll find the proceedings very interesting."

The boy and the Wing Commander settled into chairs side by side as Benson and Gillanders discussed technicalities together. At barely one minute to ten, a knock sounded on the office door, and at a call from Benson some ten or twelve scientists and technicians filed into the Director's sanctum. Extra chairs had been provided and soon they were all seated, Mr. Gillanders and Sir George at the table. Several of the men looked at Chris and Greatrex in some surprise, for they had understood that this was to be a top-secret huddle. The Director waited until they were all settled.

"Gentlemen," he began, "I have called you here for a very important reason —nothing less than to inform you all of the object behind our recent activity and the modifications to the rocket that have been puzzling you so much."

"Excuse me, chief—" it was Halifax who spoke—"after all the security restrictions weve had lately, isn't it carrying things a little too far to have your nephew in on these discussions?"

"A reasonable point," Benson conceded. "But there's a reason for it as you'll know in a few moments.

"The modifications that have caused you so much work have been ordered by the government for a very important reason. The history of the situation is this—" and Benson gave an account of the domes near Pico and the decision that they must be fully investigated without delay. He went on to describe the limitations of present methods of research, and how the Rocket Research Establishment had been instructed to assist. His audience listened with silent intensity to all that their leader said. But as he concluded with the information that a human being would be inside their next projectile, their calm was shattered.

Sir George waited until the murmur of surprise died down. Then he went on.

"From the way you have all reacted, I know you realize that it should be some time yet before, in the course of natural development, it would be feasible to launch a fellow creature into space. But it is absolutely imperative that the difficulties of observation through the earth's atmosphere be overcome at once. The only way is to send an observer in

our rocket up beyond the air into the vacuum of space. And it is just that which we are going to do at 3 a.m. on September twenty-ninth."

There were several whistles of surprise. Sir George's bombshell had been one hundred per cent effective. Two or three of the men began asking questions at the same time.

"Just a minute, gentlemen, please. I haven't finished yet. I know most of the questions you're bursting to ask and I can give you the answers. Perhaps what you want to know 118

most is—who's to go? Size has been the limiting factor. Since we haven't time to make the rocket to fit the person, we have had to find a person to fit the rocket. Christopher Godfrey, this young man here, will be the first human, so far as we know, to venture into the unknown."

This time, as Sir George paused, there wasn't a sound. All eyes turned on Chris, who squirmed uncomfortably in his chair. Before the hubbub could break out again, Benson began talking once more.

"Christopher is not my nephew, and the relationship was only arranged for security purposes. He was selected because he is small, because he is fit, and because he has an excellent scientific education. He fully understands the dangers of the job he has volunteered to undertake. I suggest, gentlemen, that here is courage of the highest order—courage that very few of us possess."

At this, Chris was too confused to notice what was happening, though he did hear a sound suggestive of a cheer that rose in the room. For five or six minutes Sir George allowed the animated conversation to continue. Then he called for order, after which he handed the meeting over to the Deputy Director who spoke at some length on technical details. There was still a tremendous amount of work to be done, but, now that they knew their efforts were to have a definite and exciting objective, this did not worry these enthusiasts. Chris would now come very much into the picture. He would require considerable instruction about the actual operation of the instruments in the rocket head. They all promised their absolute cooperation.

Before the meeting ended, however, Benson had some serious and sobering

remarks to make.

"Gentlemen, may I remind you of the meeting that we had a few weeks ago. The situation is unchanged. There is still a spy among us, and he is, I believe, in this room. We have been unable to discover who he is, though we have

made and shall make every effort to do so. I have been compelled to reveal the information about our objectives to you all, for the rest of you are loyal, I have no doubt, and time presses. It is, therefore, a risk I have had to take, and I must appeal to you all to help to the utmost of your power to find this traitor.

"One further matter. In order to spare our young friend embarrassment, and to keep our secret from the outside world as long as possible, I must ask you to refrain from revealing to anyone outside this room who will be the occupant of our rocket. Let your families still think that one of the apes will be the passengers. Now I suppose there will be hundreds of questions you'll want to ask, so we can let Christopher and the Wing Commander go, for you will be seeing a great deal of them from now on."

Chris gave a great breath of relief as he and Greatrex headed for the door. The Wing Commander, guessing how much his protege would hate any fuss or, even more, being an object of curiosity, launched immediately into speculation about the projectile.

Friday afternoon was most exciting for Chris, for Billy took him inside the rocket shell and explained many of its intricacies to him. No longer was Chris met with curious, even hostile, stares from the men at work. Instead, everyone was most kind to him—just as if Im already doomed, Chris said to himself a little ironically. The hours fled.

At the request of Sir George, Chris was to stay with Mrs. Gillanders that evening. The Director, the Deputy Director, the C.I.D. man, and Greatrex had a job to do that night. Surely, in view of the revelation made earlier that day, the spy would be compelled to operate that evening. But no! The four men returned next morning after a wasted night. Not a sign of an intruder, though they had watched patiently until the train steamed away. The C.I.D. man was inclined to think that they had taken Chris' report too seri-120

ously, but Benson insisted that everything must be taken seriously. Chris felt self-conscious when Billy told him of the negative results of their night's work. But he steadfastly maintained that it was not his imagination that was responsible for his having twice seen furtive movements near the train.

Sir George Benson decreed that everyone at the Establishment should have a quiet week end, getting as much rest as possible before the final lap. Monday was "T-day"— as they were terming rocket take-off day—minus twelve. Things now were really slipping into top gear. If some of the days of the previous week had dragged slowly for Christopher, this week's days seemed to flash past in breathless succession. He spent his time in the enclosure, either on the launching apron, in the rocket, or in the control room where a whole series of new instruments were being installed.

On Wednesday he donned the G-suit and lay, for the first time, on the contour couch in the rocket head. His head and feet were just clear of the inner casing of the projectile. All around him was a bewildering array of dials and instruments. Above was the transparent section of the nose into which the optical gadgets were being fixed. Soon the telescope and television camera would be in place and he would have to learn how to operate them. It was all intensely exciting to him.

In the control room Chris was shown the switch that would actually fire the rocket, together with the other controls which could direct it by remote action. Television and radar screens were almost in place. By the next week end, they would be tested fully. A whole bank of recording instruments, used on previous flights to reproduce the readings of the dials in the rocket, were already in position. A series of switches could be used in an emergency if any of the automatic operations built into the rocket failed to work. Sir George, in explaining everything to Chris, pointed

out as an example the switch that would be pressed if the parachutes attached to the rocket cabin failed to work automatically as it was re-entering the atmosphere. This switch would insure without fail the functioning of the parachutes, a second switch would bring into use a further parachute.

Benson described to Christopher the method used to recover the "life" compartment. It would be detached from the main body of the rocket just

before the projectile returned to the atmosphere. Then the parachute would operate automatically, insuring a tolerably gentle landing for Chris and the instruments. Radar would plot accurately the position throughout the flight and the location of the landing point. Three helicopters would be in the air and the nearest would be directed by radio to pick Chris up. It should be there a little more than a minute after he had actually landed.

One switch, labeled "Anesthesia," intrigued Chris. He found Sir George a little hesitant in describing its use. After some persistence, the Director at last told Chris that this switch controlled a small valve in his G-suit and would release into it an anesthetic gas which would immediately send him to sleep. This would be used if the acceleration proved insupportable or—well, if the very worst that could possibly happen occurred.

Hmm! thought Chris.

There was naturally much comment among the families of the scientists about the nephew of the Director being allowed into the enclosure daily. "Rank favoritism" was the general conclusion.

A constant medical check was now kept on Christopher, and the little spare time that he had was spent in poring over lunar photographs that had been sent from England.

On Friday night observation was again kept on the train. This time the watchers saw the prowler, but were unable to catch him before he disappeared. A command from Sir 122

George prevented the train from leaving at its usual time, and as soon as daylight came a careful search was made. It was Greatrex who discovered an envelope fastened by adhesive tape beneath the third car from the engine. The envelope was removed and opened. It contained notes about the optical and other instruments being fitted to the rocket head. There was no clue to the identity of the writer, but Benson was satisfied that they had at last discovered the method of communication. The envelope was carefully sealed and replaced, and the C.I.D. man concealed himself in the empty car to travel with the train and find out what happened to the envelope at the other end. Later he reported that when the engine stopped to take on water at a small wayside station about two hundred and fifty miles along the line, a railway worker removed the envelope. He had

arrested the man and the matter was being pursued from there.

It was almost lunch time on Saturday when Chris went to the Director's office. He met three tired but cheerful men.

"Well, I think we've sealed the leak, Chris," Benson told him. "Unfortunately we still haven't a notion who the spy is, but at least we found his method of passing out information. Thank goodness he can no longer harm us by selling data to a foreign country. What we must watch out for now is that he might try sabotage on the rocket. You will be careful, won't you, Chris, not to take the slightest risk?"

"If the traitor is one of the technicians, how can you prevent his damaging the rocket?" Chris asked.

"Only by double-checking all the work," Billy replied with a sigh. "Sir George and I will be doing that from now on. I don't think we shall miss it if anyone tries any funny business with the installations. There is one thing, though, that would be of considerable assistance."

"What's that?" asked Sir George.

"Forty-eight hours in every day," was Billy's tired reply.

©

hapter Thirteen

On that same Saturday morning, September twenty-second, the news first came to the British public. The Russian radio had broadcast a report the previous evening that British and Australian scientists were about to experiment with a human being in their next rocket firing at Woomera. Immediately a prominent left-wing British newspaper took up the report and produced a strongly worded editorial. On Sunday the report was the main feature of most of the papers.

Opinion was divided. A few newspapers reminded readers that there was no progress without risk, and that sooner or later someone had to be the first human being to be launched into space. The majority of the papers, however, condemned the experiment as premature and said that it should not be allowed to proceed. A final spark was applied to this explosive

material when, on Monday morning, a left-wing illustrated paper splashed the information that the subject of this inhuman experiment was to be a small schoolboy who had returned to Woomera with the Director, Sir George Benson.

The mention of Benson's name brought back memories of his recent visits to Norton and from that it was only a small step to pinpoint the victim for the experiment.

Before midday, Mrs. Ingall had been forced to close her shop, such was the persistence of reporters and photographers who had swarmed in to interview her. The nature of some of their questions was such that Miss Darke had a difficult task to reassure her. As soon as Mr. Berry heard 124

what was happening he made his way to Mrs. IngalTs shop. With much difficulty—including the undignified shouting of his name through the letter slot—he persuaded the two women to unlock the door and let him in. When he left, a half hour later, a few of the newsmen detached themselves from their vigil at the shop to follow him along the street with questions about Chris' school life. The academic calm of the headmaster was eventually broken down, and he turned and addressed his tormentors in terms which later he blushed to recall.

On Tuesday the newspapers really let themselves go. Now that they had the name and some details of the person who had been persuaded to go inside the rocket, they gave full play to the story. Where they obtained all their information no one knew, but full details were printed about Chris and his life at Norton; even a photograph had been produced from some unknown source.

The agitation to call off the experiment grew. Editorials demanded the recall of Parliament, petitions were organized, headlines continued to scream. One paper, which had been the defendant in numerous actions for libel, came out with the story that Christopher had been "sold" to the inhuman scientists. It painted a picture of an immature youth and of a commercially-minded aunt who saw the gateway to a life of ease open up before her. Many of Mrs. IngalTs friends were indignant at the implication, but after dark that night a stone smashed the shop window. Early the next morning Miss Darke handed the keys of the shop to the police and took Mrs. Ingall away to an unknown destination.

On the other side of the world, in Woomera, the news burst a little later. After the morning plane delivered the newspapers on Monday, the small community read that it was the center of what was rapidly becoming a world-wide controversy. At first speculation was rife as to who the pas-

senger would be. Many an agitated wife demanded from her husband assurance that he was not to leave her in this unceremonious manner. On the following day everyone knew that Chris was the one who was to be launched in the projectile.

The effect on the people around him was much worse than Chris had expected. He no longer felt himself to be an object of contempt among the younger generation, tolerated only because he was the nephew of the Director. Now he was looked upon by some with pity, by others as a fool, by a few as a hero, and by all as an object of the utmost curiosity.

Sir George Benson, Mr. Gillanders, and most of the senior staff realized that once again a vital secret—the last—had been betrayed. Out of concern for Chris, Greatrex was moved at once to the Gillanders' home, and it took all his efforts and ingenuity to protect the boy from the attentions of the curious. The inevitable reporters had arrived, and, like Chris' own home so far away, the Gillanders* house was in a state of siege.

Helen and Betty could not make up their minds about their guest. On the whole, they were inclined to believe that he was mad, or at least that he was incapable of appreciating the risks he was running. This did not improve their opinion of the menfolk responsible for imposing so much on the poor little thing. To Christopher it seemed that this second state of affairs was worse than the first.

Most of the European papers had taken up the subject. The controversy was sweeping the United States. Rarely had a question engendered so much heat in the Western world. Protest marches were made, meetings were held in Hyde Park and Trafalgar Square, Members of Parliament were put under pressure. On Thursday morning the Minister of Supply called a press conference and issued a prepared statement: 126

In view of the public concern about the rocket firing shortly to take place at the testing ground in the Australian desert, H.M. Government wish to make

the following facts known.

(1) For urgent reasons of National Defense, details of which it would be inadvisable to make public, it has become essential to investigate certain features of the moon.

(2) Owing to difficulties that are fairly widely known, these investigations must be made from beyond the earth's atmosphere.

(3) The only method available to H.M. Government for doing this is by means of a high-altitude rocket, a number of which have already been successfully fired at Woomera.

(4) For reasons that it is not possible to discuss in detail, it is imperative that a human intelligence should direct the observations from inside the rocket head.

(5) Since, due to the urgency of the matter, there is not time to construct a specially designed projectile, the present model must be used.

(6) This severely limits the choice of persons available for this task, as such a person cannot be more than fifty-eight inches in height.

(7) Coupled with this stature, the person concerned must have a sound scientific background and perfect health.

(8) Christopher John Godfrey fulfilled all these requirements, and was invited to undertake the task. Mr. Godfrey fully understands the nature of the undertaking and the risks involved. He agreed to accept the invitation.

(9) Every precaution that human ingenuity can devise will be taken to insure the safety of Mr. Godfrey. Nevertheless a certain amount of danger cannot be avoided.

(10) H.M. Government are deeply grateful to Mr. Godfrey for his patriotism and courage.

(11) The firing will take place in the near future.

After handing a copy of this statement to the members of the press, the Minister indicated that he could not answer questions, but that a further

statement would be issued as soon as possible. In a matter of seconds after the Minister had finished speaking, the room was completely empty of reporters, each making at breakneck speed for nearby telephones. Newspapers and radio gave the statement full prominence and immediately public opinion, while it speculated on the necessity for this remarkable investigation, was unanimous in expressing admiration for the boy who had agreed to undertake the dangerous mission.

Christopher had little chance to observe these changes of the public mind. Take-off—or "T-Day"—was to be on the following Saturday, September twenty-ninth. Each morning as he awoke his first thought was—T-Day minus six, T-Day minus five, T-Day minus four. . . .

For the rest, he was fully occupied on the testing apron, in the rocket head, or at the control room. His suit and its various connections were repeatedly tested, as were the electronic controls and the communication system. The liquid oxygen plant had commenced its task of making the necessary quantity, and the fuel—alcohol—had already arrived in rail tankers. A few important people and visiting scientists had been quietly arriving, and the atmosphere of the Establishment was steadily building up in tension. Work continued without pause on the tall, slender projectile, and at night the apron was brilliantly floodlighted. The glow could be seen from Woomera, and it seemed to increase the mounting excitement in the town itself.

All this time a close watch was being kept on Christopher, and the doctor at the Establishment gave him daily 128

check-ups. Physically he continued in excellent condition, but his nervous system began inevitably to reflect the crescendo of excitement and strain. Each of his three chief friends showed him the utmost consideration, even affection. Sir George, now almost continually without sleep, spent half of his time with his protege and the other half carefully checking the work on the rocket. Billy Gillanders gave Chris many a friendly grin of encouragement as he snatched a few brief moments at his home. Greatrex was Chris' constant companion.

Dr. Saunders had arrived, and he spent many hours with Chris, again poring over lunar photographs. The chief technician in the optical team repeatedly practiced with Chris the operation of the telescope and cameras until the boy felt that he could have performed his task in his sleep.

On Thursday evening, T-Day minus two, Benson told Chris that a full-scale rehearsal would be held early the next morning. Everything would be as nearly as possible like the actual firing except that there would be no take-off. The fuel and oxidant tanks of the rocket would not be charged until two or three hours before the launching, so there was no danger of a premature trip.

At eight o'clock Chris went to bed. According to the precise program that had been drawn up by Sir George, he would be awakened at 1:30 a.m., eat a light meal, then proceed to the firing apron where he would put on his suit and be assisted onto the contour couch. Then the rocket head would be closed. All the engineers, scientists, and technicians would be at their duty stations and would go through the same routine that they would carry out a day later.

Chris went to bed but not to sleep. Whenever he had lain awake before, the nights had seemed endless, with each minute an age. Now the seconds went by in relentless procession as he tossed and turned. The more determined he was to sleep, the farther away slumber seemed. When he

tried the old dodge of counting sheep he began with normal animals, but soon they were jumping higher and higher over the stile, their bodies in some mysterious way assuming the shape of the rocket. Sometimes the night seemed to last for ages; sometimes it seemed to be passing in a flash. When Billy Gillanders came to wake him at one thirty, Chris had had no sleep at all.

Helen had prepared a meal for him. As he ate, Chris wondered whether he should call it supper or breakfast. He was not very hungry, and Billy looked at him a little anxiously. By 1:50 a.m. they were on their way to the enclosure, passing right into the glare of floodlights that surrounded it. Sir George was waiting at the control buildings.

"Hello, Chris," he greeted him. "We're all ready for you. Now first of all I want to tell you exactly what's going to happen both now and tomorrow.

"About half an hour before take-off, you'll go to the firing apron where you will be assisted into the G-suit. Then you will enter the head of the rocket and take your place on the couch. All the connections will be made, after which well be talking to you from the control room. You'll hear me

counting off the seconds before firing, and at zero hour I will be the one who will press the switch. For the next seventy-five seconds you will be under full thrust of the motors, and it is then that you will be most uncomfortable. If you can, I shall want you to keep talking to me and to describe your reactions. Although our primary purpose is to investigate the domes, there's no reason why we shouldn't take advantage of the situation to do a spot of research.

"In the control room here we shall be following your flight very carefully. Any corrections that may be necessary to the path of the rocket will be made. We shall be using about thirty-two channels of communication with you, and we shall be in complete control throughout. At the end of the period of thrust you will be carried along by the mo-

mentum of the rocket for perhaps a minute and a half. This is the vital period of the investigation. You will focus the telescope onto the domes and hold it there. We shall be picking up the picture from the television lens, and we shall also be operating the camera.

"You should reach a height in excess of one hundred and fifty miles at the peak of the trajectory. Then the rocket will begin its fall back to earth. By firing small side jets we shall endeavor to keep you facing the moon as long as possible, so that the maximum number of pictures can be taken. At a height of about twenty miles you can relax, for we shall then be controlling your return into the atmosphere. A small parachute will be released from the rail to act as a preliminary brake. A larger one will be released when you have fallen to a height of fifteen miles. Finally, when you are ten miles high the life' compartments will be separated from the rest of the projectile, a further parachute released, and both you and the instruments should make a landing that will not be too uncomfortable. You will remain quite still until we come along to release you. This, as IVe told you, will only be a matter of seconds. Then your task will have been completed and you will have earned the grateful thanks of the government."

"Er—excuse me for asking, but just how do those parachutes work?" Chris asked with a slightly forced smile.

"There's an automatic arrangement built into the head," Benson answered. "But in case of accident we can also operate them from the control room here. I don't think you need worry about anything going wrong."

"I shall be glad when it's all over," the boy murmured. "How long altogether will the flight last?"

"Roughly about twelve minutes. Not very long, is it, in view of the length of time that the preparations have taken? Now we'll go through the same routine for the dummy firing as we shall for the real thing tomorrow. You will hear me

give orders in the same sequence and at the same times as I shall twenty-four hours later. It's almost time for you to go out to the apron. Where's Whiskers, I wonder?"

"Here, Benny," grinned the Wing Commander, appearing at the door. "Well, young feller-me-lad, ready for the dress rehearsal?"

Chris nodded, and Greatrex led him outside. The glare made him blink for a moment; then they were striding toward the elegantly slim shape of the rocket. Among the small knot of scientists gathered at the base, Chris recognized Champion, O'Neil, Halifax, and one or two others. Their job was to assist Chris into his suit and to settle him on his couch before the instruments. Other scientists, including Calverley, Priest, Rodd, and Frene were remaining in the control room to carry out Sir George's orders at the remote-control panel. Still others would be scanning the recording instruments and television screen, though their duty tonight would be purely nominal. Billy was scurrying about between the two groups, trying to be with each at the same time.

At a given sign, the boy quickly slipped off his outer clothes and started to put on the space suit. Many willing helpers soon had him ready. By 2:45 a.m. Chris was settling onto the couch, and the others were busy with the connections. Soon Sir George's voice came through, inquiring how things were going. Chris gave him an account of what was happening and in turn could hear the buzz of conversation behind Sir George's voice in the control room.

It was some few minutes before the Director's voice came to him again.

"Feeling all right, Chris? Oxygen okay? Everything's set

here. Even the helicopters are airborne. If the clouds keep

away, see if you can pick up Pico during the observation

period. It will be interesting to see the difference lack of

atmosphere will make between photos taken by the camera at ground level and at one hundred and fifty miles up."

"Righto, sir. I'm feeling fine. How much longer before the take-off?"

"Two minutes exactly. I shall be starting to count soon."

A thought entered Chris's head. Suppose the weather tomorrow were wet and cloudy! Would the firing have to be postponed because of observation difficulties?

He was about to raise this question with Sir George, but realized just in time how foolish the query would be. No matter how cloudy it was at the surface, he would be miles above all weathers, right up in the clear. As for ground observation of the rocket during its flight and return, this was to be done by radar and would be unaffected. Again the voice of Sir George broke in upon his thoughts.

"Ninety seconds."

Chris gazed around the tight little cabin in which he was lying. Everywhere was evidence of the months of thought and work that had been put into this project. Tomorrow it was going to have its test. How would it stand up to the demands made on it? How would he himself respond?

"Eighty."

The oxygen supply was working perfectly, the gas making a slight hissing sound as it entered the helmet. Benson's voice came through at regular intervals. At last he was counting off each second. Finally, when they had all ticked off, he gave the order to fire.

"This will be your worst time, Chris," the Director's voice chatted away, "but I don't think you'll experience a higher 'g than you tasted at Farnborough. Thirty seconds gone. This is when the clock will seem to stand still. Not too warm, are you? Forty-five gone. Old Whiskers is here beside me. Bet it's a treat not to have him breathing down your neck all the

time. One minute. Won't be long now. You'll be traveling at over a mile a second by this time.

That's it then. All over. Now may we all have a look through that telescope of yours?"

Chris carefully focused the instrument onto the lunar surface, soon pinpointing the little mountain that was to be the object of their scrutiny. The magnification of his telescope, limited in size by the space available, was not so great as that of the instrument near St. Albans through which he had peered. Yet he could pick out the several spots, no larger than the head of a pin, that were causing so much anxiety to so many people.

"That's fine," came the voice of Sir George. "We can see quite well. Hold it steady while we photograph. We're also taking spectroscopic recordings. Of course tomorrow you'll have more trouble holding the domes in your object glass, but we shall keep you as steady as possible."

For a little while longer Chris continued to direct the telescope onto the moon. Then Benson told him that he would now be at maximum altitude and would be starting his fall back to earth.

"First parachute out," Sir George announced a little later. "You should be able to feel it go for it will stop your free fall."

"Second chute out," came over the radio a few minutes later. Then, as Chris waited, listening to the clicking of the complicated gadgets around him, he felt a little quiver in his cabinet.

"We've fired one rivet," the Director's voice explained. "You will now be parted from the body of the rocket and in a few seconds the last parachute will be open and you will come floating down. Feeling all right?"

"Yes, thanks. Hope I feel as well tomorrow. Shall you be telling me when I 'touch down'?"

"Of course. As a matter of fact youve landed—nowl You'll have to stay a little longer while we find you. We won't be too long." 134

About another two minutes passed by. To Chris it seemed that the clock in

the panel at his side had almost stopped, when he heard the sound of the nose being removed. Two faces were grinning down at him as their owners bent over to release him from the couch. Soon, with their assistance, Chris clambered out of the cabin. It was hard to realize that he was not out in the desert, but some forty feet up in the servicing gantry on the same spot he had entered the rocket twenty-one minutes before.

Billy Gillanders was at the foot awaiting him. As soon as Chris had been helped to put on his ordinary clothes, the two walked along to the control room where Benson was ready for them.

"Everything's gone according to plan," he greeted Christopher. "No snags that we can think of. If all goes as well tomorrow, it'll be 'in the bag/ I think we have some pretty good pictures from tonight's rehearsal. Billy, will you take Chris home and tuck him up again? Good night—rather, good morning, Chris lad. I'll be seeing you later."

With Sir George's friendly pat, Christopher followed the Deputy into the jeep. Reaction was beginning to set in, and he felt listless and without energy. Billy quietly noted his unnatural silence as they drove back to Woomera. Helen was waiting for them, but at a sign from her husband she asked no questions. After having a glass of milk and a few crackers, Chris went off to bed.

(0

hapter Fourteen

For a few moments after he awoke Chris lay in a pleasantly inert state. The sun was shining through the window and the bedside clock said that it was after ten o'clock.

Well—this is it, he thought as he lay there. Shall I be looking at the sun tomorrow?

Determined to combat any tendency toward morbid thoughts, Chris jumped out of bed and had a vigorous bath. He felt fine afterward, and as he finished dressing he caught the first whiffs of an appetizing breakfast Helen had prepared. Still painfully aware of how she had felt toward him on his arrival, she greeted him warmly. Chris was often embarrassed now by the

sudden though welcome change in Betty and her mother.

Betty had gone to school, Mrs. Gillanders said as Chris attacked his breakfast, though what work either she or the other pupils would do was problematical. When he had finished, for some reason there came an awkward pause in the conversation. With a visible effort Helen spoke.

"Chris, when you first came here, I'm afraid I wasn't very kind to you. No, no," she persisted as he attempted to protest, "it's true. Betty and I underestimated you because of your size, and we rather resented the favors you were getting visiting the firing site and all, just because you were Sir George's nephew, or said to be. I'm truly sorry, Chris. I do hope you've no hard feelings?"

Chris had gone quite red. "You've been most kind to me, Mrs. Gillanders," he said. "I can't blame you for thinking what a little shrimp I was when I first came here. For some time I've had that to face because, for some reason, I stopped growing when I was fourteen. Everybody hasn't been so decent about it as you have. You've made my last few days very pleasant. Whatever happens, I shall always be grateful to you, Mrs. Gillanders."

Helen gave the boy's arm a squeeze and with a rather quivery little smile jumped up from the table and began to clear it. Wing Commander Greatrex, it seemed, had been in the living room for the last hour, idly looking through a pile of magazines. He jumped up as Chris joined him, and 136

his famous mustache was soon waggling with his infectious grin.

"Morning, young feller-me-lad!" he greeted him. "Slept well?"

Chris assured his friend that he need have no anxiety on that score. The two bade Mrs. Gillanders au revoir and jumped into the ever-present jeep. The Wing Commander's furious driving brought them to the enclosure in record time. Sir George, Billy, Doc Saunders, and one or two more were poring over a table full of photographs as Greatrex pushed his companion into the room. They all looked up and called out in a friendly chorus. Benson quickly strode over to Chris and, with a protective arm around his shoulder, led him up to the table.

"The photographs have turned out well, Chris. Care to have a look?"

Only too eager, Chris was soon looking at the familiar scene of the lunar surface around Pico. There seemed to be hundreds of prints on the table; he could see that some were enlargements of others. Saunders had about a dozen in his hand.

"This will show you what we're up against when taking photos at ground level," he said, showing them to Christopher. "These are a series of enlargements of the same exposure, each more magnified than the other."

Chris looked through them slowly. As the magnification increased, the details became less clear. Only on the smallest were the outlines of the domes at all distinct. The larger ones showed nothing but nebulous shapes.

After a few minutes Benson interrupted Chris. 'Time for a medical," he said. Putting the prints down, Chris followed the Wing Commander from the room. As the door closed, Benson spoke to the others.

"Today is very critical for him. He's bearing up in fine style so far, but we must watch him. I understand he didn't

sleep too well before the rehearsal last night, so I'm arranging for a mild sedative to be given to him this evening. It just wouldn't bear thinking about if he were to crack up now."

The others agreed gravely as they rose to leave on their allotted tasks. Only Billy remained with his chief when the men had left. Lines of fatigue and strain showed on the faces of the two friends. For a moment neither spoke.

"I think I shall resign and take up sheep farming when this is all over," said Billy.

Benson sighed. "Yes, we've both had it pretty thick lately," he agreed. "Still, everything has gone according to plan. I don't mind admitting to you that I'm still afraid that something will go wrong at the last moment."

"Sabotage?"

"Could be. We haven't found the traitor yet. Surely he won't let us get away with it. He's bound to show his hand tonight. And yet, as you know, we've

both checked the work of the suspected men most carefully and it's all been perfect. I feel it's ominous, don't you?"

"I don't know what I feel, Benny. As you say, all the work's in perfect order. I'm sure, absolutely sure, that nothing has been tampered with—yet. But you know, such a little thing could upset the whole apple-cart—pulling the wrong switch, a disconnected wire, a loose valve. It would be incredibly easy for Mr. X to arrange for these things to happen under our very eyes."

"Well, we can only do our damnedest to prevent it. If anything happens to that kid I shall feel like a murderer for the rest of my days. Look, Billy, one of us had better be in the control room continuously. Go home and have a spot of shut-eye for a couple of hours. Then come and relieve me, and I'll go and do the same. We shall both want to be on our toes tonight."

"Right. Any special plans in mind?" 138

"Only that I want you to keep your eyes on Rodd and Campion and I'll do the same with Halifax and Priest. All stations will be manned from midnight onward. None of those four has any reason for going near the rocket again. Their work's finished now and tested. IVe given the C.I.D. chap instructions to let one of us know immediately if any one of them goes near the apron. Your Mr. X will have to do his dirty work here in the control room tonight if he's going to try anything."

"God help him if he does. So long then. See you later."

After Mr. Gillanders went out, Sir George started for the control room. He asked the guard to admit him, for as there was no one on duty at that moment the room was locked and a man stationed outside. On entering, Benson gazed around the long narrow chamber with its mass of complicated apparatus. At intervals there were long slits in one of the walls. Through these the towering shape of the rocket could be seen—not directly, but with the aid of mirrors, so that the room was protected from blast in the event of an explosion during firing. Some half dozen chairs were in front of the instrument panels. Prominent in the center panel was the very accurate clock with its red seconds finger creeping steadily around.

At the back of the room, almost in the center, Sir George's table was

placed, giving him a full view of everything that was going on. A little wearily he walked over to the swivel chair and sat down. He eyed the rows of dials and switches, which in a few hours' time would mean so much. Had he omitted anything? Was there anything he had forgotten, anything more he should have foreseen?

It was useless to go over everything in his mind again; he had already done it so many times before. To Benson, this firing was unlike any previous ones for which he had been responsible. For there was a possibility of trouble, and for the first time a human life was at stake. With a catch in

his breath, he realized that he had grown very fond of the intrepid young man whose existence he would soon hold in his hands. He buried his face in his hands as he murmured a silent prayer.

At a tap on the door Benson rose and walked quickly to it. The medical officer stood outside. He reported that his examination of Christopher was completed. Both men returned to Benson's table.

"I've given him a thorough check-up, and as far as I can see he's quite all right. His pulse is a little fast and I think he's beginning to show signs of strain. I suggest that as soon as he is roused in the morning he should be given a shot of atropine to steady him. Otherwise I think he'll be all right."

'Thanks, doctor. Perhaps you'll arrange to do it yourself. That will be at 0130 hours. You've fixed up his sedative for this evening?"

"Yes. Only a mild one. We don't want him to be comatose when he'll need all his faculties. You can leave that safely to me."

"Right. Now will you ask Wing Commander Greatrex to take Christopher away and to keep him occupied until it's time for him to turn in?"

The doctor nodded as he left the room. Benson paced slowly up and down.

Chris and the Wing Commander were chatting to Dr. Saunders in one of the corridors outside. The M.O. signaled to Greatrex who immediately came to meet him.

"Okay. But the Chief says you're to keep him busy and happy."

"Guessed as much. I've laid everything on in readiness. See you later."

Greatrex joined Chris and informed him that their orders were to make themselves scarce. With a cheery word from the astronomer, Chris followed his friend outside.

"Any ideas, Chris? Anything you'd like to do?" 140

"Can't think of anything special. No fun fair to go to here."

"No, unfortunately. Still, I think you'll like my little plan."

Chris tried to discover what the Wing Commander had been cooking up, but was unable to get a word from him. The two drove hurriedly back to town. In a short time the jeep skidded to a halt outside the Gillanders' house. Then Greatrex's master plan revealed itself. Betty and her mother were dressed for a ride, and a huge picnic basket was magically produced.

"Not at school, Betty?" Chris asked.

"I'm playing truant this afternoon with permission," she laughed. "Released for special duty!" And she gave a mock salute.

It was a gaily chatting quartet that started a short time later. The beauty spots in that part of the continent were few and far between, but Betty and her mother were able to guide them to a quite pleasant place. There they had the wonderful lunch that Helen produced from the basket. Later on they drove to several points of interest, spending the most time at the last one they visited before returning home.

Here, in midafternoon, the sun shone quite warmly. They lay in the shade of a few trees, which had managed to establish an existence at the foot of the clinlike rock. All four seemed determined to talk about anything in the world except the events of the next few hours. Betty and Helen chatted amusingly on politics, sports, and a dozen other subjects. Sometimes they revealed considerable information, and at other times an abysmal ignorance which the two males were too polite to point out. Greatrex, for the first time in Chris' presence, described some of the exploits of a few friends and himself as pilots in a famous fighter squadron during the last war. The others listened with interest as

the Wing Commander told of the heroism of some of the young men he had known.

They had been silent for a few minutes when Helen asked Chris to tell them all about his life at Norton and its school. In the friendly atmosphere of mutual confidence that now existed, Chris spoke of his Aunt Mary and her struggles, his own disappointments, his hopes for Cambridge, and his secret ambition that perhaps his small size would at least be an asset to the boat-race crew; and, finally, of his ambition for a career in rocketry.

His audience had listened sympathetically. Chris could not remember ever having spoken like this before, and the experience was very pleasant.

The Wing Commander, with a glance at his watch, brought the pleasant, intimate spell to a finish. Soon they were driving back home, chatting gaily.

It was just after 5:30 p.m. when they reached the Gil-landers' house. Sir George Benson was there waiting for them. Billy was on duty in the control room. Benson was delighted to see the lively, happy spirits of his young protege as the group bustled into the room. It was in quite a party atmosphere that they all had tea together. Just before six o'clock, at a sign from Benson, Greatrex excused himself and went into the hall. In the lively conversation Chris did not hear the telephone bell tinkle in the next room. Suddenly the ginger mustache reappeared at the door and announced that there was a telephone call for Christopher. Completely puzzled, Chris rose and went into the living room. Wondering who it could possibly me, he spoke into the waiting telephone.

The voice from the other end sounded quite distinct, though occasional crackles and variations in volume indicated that the speaker was far away.

"Is that you, Christopher?" 142

"Aunt Mary! By all that's wonderful! Yes, this is me. How are you? What a marvelous surprise this is!"

"I'm fine, thanks. Sir George Benson and Mr. Greatrex arranged it. I'm speaking to you from Mr. Berry's study. Are you all right?"

"In the best of health, thank you. Well, I can't get over it! Speaking to you like this over half the world. They never said a word to me about it."

"Do you know when you'll be coming home, Christopher?"

"Soon now, Aunt Mary. Perhaps in another ten or fourteen days. How's Norton? How's the shop?"

"Norton's just the same as ever, though I'm afraid you've become a local hero. The newspapers have been full of you, and there have been scores of reporters here. Miss Darke looked after them. Christopher, your exam results came through a little time ago. Mr. Berry says I'm to tell you you've done well in all subjects. Your place at Cambridge has been confirmed."

"Thank goodness for that! Now I can have plenty to look forward to when I come home. How's Miss Darke?"

"Sylvia's fine. I shall miss her very much when she has to leave. Christopher, I'm getting all your things ready for Cambridge. Mr. Berry is being a great help."

"I hope you've had no more trouble on my account?"

"No. People have been very good. Do you know, Christopher, I really think that when Sylvia goes I shall have to have an assistant in the shop, I've been so busy lately."

"Good-o! Well, it won't be long now before I'm back. Don't-"

A voice interrupted the conversation. "Sorry, time's up."

"Good-by, Aunt Mary."

"Good-by, Christopher. Remember me to Sir George."

"I will. Good-by."

Chris carefully replaced the receiver. His face was flushed with the surprise and pleasure of the call. Though not a

single word of endearment had passed between the youth and his aunt there was no doubt of the strong bond of affection between them. As Chris went into the other room his friends could see from his expression how much pleasure this little surprise had given him. They all seemed almost

lighthearted as they laughed and talked together. At six thirty Benson indicated that he thought Chris should be preparing to rest. It had been a pleasant afternoon, all were in high spirits, yet all secretly feared what the next few hours might bring.

As the little party broke up, no one referred to the coming day. Chris drank a glass of milk to which had been added a sleeping powder. A very short time later he lay quietly in his bed, waiting for it to take effect. The news from his aunt about Cambridge had been a great joy to him. As he thought about it, he built up pictures of the future—vivid dreams in which he steered the crew to victory, received his degree, was engaged in the most exciting research. At last the powder won. When Helen peeped into his room just after seven thirty, Christopher was taking his last sleep before the tremendous task that lay ahead.

©

hapter Fifteen

A hand was gently shaking him into wakefulness—the hand of Chris' friend, the Wing Commander. For a second he lay drowsily collecting his thoughts. Then— click! he was wide awake. This is it! he thought.

When Greatrex could see that the boy was thoroughly 144

roused, he switched on the lights of the room. Chris sat up, rubbing his eyes in the glare. He called a greeting to his friend to which the Wing Commander responded in joking fashion.

"Cup of tea coming up in a minute, Chris. Before you have it, the M.O. wants to put a shot of dope in your arm. Atropine, I think they call it—just a steadier."

Greatrex went to the door and returned with the medical officer.

"Morning, Chris," the M.O. called out. "How are you feeling?"

"A little sleepy, but otherwise fine."

"This is an injection to keep the old machine running calmly," the M.O. explained, as he swabbed Chris' arm. "There! that's it. Stay in bed and drink

your tea before you dress, and you'll feel fine. Cheerio! See you out there."

With a knock on the door, Helen entered carrying a tray. On it were a pot of tea, cups, saucers, and a few cookies. She smiled at the tousle-headed boy as she placed her burden on a side table and proceeded to pour. The Wing Commander had taken a seat on the side of the bed.

They sipped their tea and nibbled cookies companionably. "What do you feel like for breakfast, Chris?" Helen asked.

"I hope everyone won't get frightfully alarmed if I say I'd rather not have any breakfast, thank you, Mrs. Gillan-ders," Chris replied. "These cookies will be all I want if you don't mind."

"Right! I'll get a smashing meal ready for you when you come back."

"Me, too?" inquired Greatrex.

"Yes, you too, you great baby! He can't bear being left out of anything, Chris. Has he been like this ever since you've known him?"

"More or less," Christopher grinned.

The light chatter went on while the tea was drunk. Then Helen took out the tray.

As Chris dressed, Greatrex entertained him with talk about the contrariness of some of the ladies who had enjoyed his acquaintance. By the time he was ready, it was shortly after 2 a.m. He was considerably surprised to find Betty, fully dressed, beside her mother to wish him good luck as he climbed into the jeep. A look around the little town showed that very few people had gone to their beds that night. Lighted windows and shadowy groups talking quietly in streets and gardens indicated that it had been impossible to keep secret the time of the firing. As the jeep pulled away from the Gillanders' bungalow, many watchers silently waved to the young man about to undertake this awesome adventure.

It would have been quite dark but for the moon, almost at the full, riding majestically along the inky sky. There were few clouds and little wind. From just over the horizon toward which they were heading came another source of light—the glow of the Rocket Establishment. Chris glanced back

as the lights of the town faded behind them, but the Wing Commander was determined to allow no melancholy thoughts. He chatted persistently as they sped along the road.

Soon the lights of the Establishment were coming to meet them, and the countryside became brighter from the reflected glare. A little knot of men stood at the open entrance as the jeep approached. The gate was closed again as they passed inside toward the control room.

Sir George Benson was standing in the doorway. He strode out as they came to a standstill and Chris jumped off the vehicle to meet him. For a moment the man held the boy's two hands in his. This was the only sign of the warm affection that each had for the other at this crucial time. Chris followed Benson into the lighted building, into a small 146

office alongside the control room. The Director closed the door behind him.

"Chris, lad," he said, "we can only stay here a few minutes. I thought perhaps you and I might spend the time together in silent prayer. No matter how perfect man may try to make a machine, it's God who has the last say as to whether or not it will function. Your life will soon be in His hands, and I know you'll be all right, if such is His purpose."

"Thanks, Uncle George. It would be a comfort to say a prayer with you. I'm a bit shy with other people, but I'd like us to do it together."

The man's arm went around the boy's shoulder, and they knelt on the dusty concrete floor.

Five minutes later Benson and Christopher entered the long control room. A score of people were inside, most of them scanning the various gauges and dials, which they would be observing throughout the flight. Two or three were obviously important guests. All eyes turned on the boy as he stood beside the tall Director, and many an encouraging smile was flashed to him from his friends. Billy Gil-landers, eyes tired but alert, sat at the Director's table. Chris and Sir George went over to speak to him, and Billy conveyed to Christopher the heartfelt good wishes from everyone in the Establishment.

As the two men talked together, Christopher glanced around the room that

was so very soon to control his destiny. When operations began, the brilliant lighting would be reduced, to show up the illuminated dials and gauges and the television screen on which everyone present would follow Chris' journey. The boy moved about the room speaking to the scientists he had come to know—Halifax, Campion, Priest, Jones, Foxon, Rodd, O'Neil, and several others. These were the men whose work would shortly be put to the test in drastic action. Some showed the strain under which they had been working for so many weeks, but

all had an encouraging word for the small youth. O'Neil gave Chris a lucky shamrock with the comment, "We've eliminated chance as far as we can, but if there's any luck knocking about, you might as well have it." Halifax gave the "fingers crossed" sign as he walked past Chris along the huge instrument panel. Campion seemed rather tense, but gave him a warm handshake. Rodd, tense too, dropped his pencil. He bent to pick it up and patted his forelock back into position as he, too, shook hands. The boy was confident that if anything did go wrong, it would not be the fault of any of the men he knew.

Then it was 0230 hours. The concealed loud-speaker crackled a little as a voice announced that the fueling of the rocket was now complete. All tanks were full, all valves tested. At a sign from Sir George, Chris returned to the center table and prepared to accompany the Director out to the apron. A chorus of good wishes came from the men on duty all along the room. Billy gave him a tight handshake, and, heart beating a little faster, Chris followed Benson outside.

It was almost as light outside as it had been in the building. Floodlights lit up the whole of the control block. Then came a patch of comparative darkness, with another island of light a little way off. In the center of this island rose the slim, tapering shape of the rocket with the servicing gantry alongside. A dozen hurrying black shapes denoted last-minute work on the graceful giant. The two drew nearer, each occupied with his thoughts. At one point a flood of sheer panic began to creep over Chris; it took an immense effort of the will to avoid crying out that he wouldn't go after all. He hoped Sir George had not noticed his hesitation, or the sweat that he felt on his forehead. He needn't have worried; the Director's thoughts were somber. With every yard that they covered, Benson had to fight the thought that he was sending this lad to his death, that he

was accompanying him to his execution. He was thankful that Chris could not read his thoughts.

A small knot of men stood at the foot of the rocket, waiting. At a few crisp words from Sir George, they began to assist Chris to remove his outer clothing and to put on the G-suit. During this Chris experienced an almost uncontrollable urge to giggle. At last the suit, except for the helmet, was fitted to Sir George's satisfaction and Chris was ready to mount the gantry. For a brief moment the man and the boy gazed intently at each other, then their hands were clasped. Perhaps it was only for a second that they remained so, perhaps it was much longer. Neither could tell. The scientists stood looking silently on. The moment passed.

"Right. Off you go, Chris lad," the Director said briskly.

"See you soon," the boy smiled back as he put his foot on the ladder. Sir George turned away sharply and began his walk back to the control room. Chris climbed onto the little platform at the top of the gantry. There others were ready to help him. In a very short time he lay on the contour couch, his helmet secured and the fastenings and connections completed. With a "thumbs up" sign from one of the technicians, the job was ready. There remained only the sealing of the rocket head, and while this was prepared, Chris peered through the aperture. At last it was in position and fastened and he had said good-by to the outside world.

It was 0249 hours. A feeling of panic began to surge over Chris as he lay silently waiting. Then there was a sound in his helmet and he heard the voice of Sir George. How he thanked God for that sound! He replied cheerfully, telling Benson that he was feeling fine.

"Sorry about this long wait, Chris," the Director's voice was saying, "but you have to be ready at least ten minutes before take-off in case there's any last-minute hitch in the communications. Everything's fine and we're all on our toes here in the control room. I shall soon be starting to count.

Don't forget that commentary if you can. We shall record it, and you can hear it played back in the morning. Zero minus five minutes."

As he called out the time, Sir George looked around him. The men on duty were watching their instruments and switches tensely. Billy seemed to be

supervising all of them, but Benson knew he was maintaining a particularly close watch on his pair of suspects. He himself was keeping close scrutiny on the other two, but none of the four betrayed himself by so much as the twitch of an eyebrow. The official observers alone seemed to be detached from the whole proceedings. After all, thought Benson a little angrily, to them it's all impersonal. They haven't the responsibility of someone's life in their hands, someone to whom they've grown deeply attached.

"Four minutes."

Outside, the radar scanners were turning ceaselessly. Although there was no sound from them in that thick concrete building, three helicopters were hovering in the darkness. An ambulance, fully manned, was ready and waiting.

"Won't be long now, Chris," Sir George called into the microphone.

"The sooner the better, sir," the boy's voice came back over the loud-speaker.

All in the room could hear clearly even the sound of his rapid breathing.

"Three minutes."

Billy Gillanders was gently mopping his forehead as he watched the men in front of him intently. He'd break the back of any of them who did a thing to increase the risk to young Chris. Why had it had to happen to them, he asked himself. It was trouble enough having this lad's life on their hands without being saddled with a traitor.

"Two minutes."

Now the tension in the room was beginning to affect the

observers. The icy detachment was vanishing as they listened to the breathing of the boy outside in the rocket. One of them even shuddered a little as they all heard an involuntary little moan from Chris as he lay there waiting.

"One minute."

The firing switch had been placed in the center of Sir George's table. For a normal firing it was situated on one of the instrument panels, but in view of the responsibility and importance of this particular operation, and because of the increased number of people in the room, the wiring had been modified so that the Director himself would make the vital contact in full view of all. Benson now found his eyes continually drawn to the switch. It was with an effort that he also watched the slowly moving finger of the clock and the men in front of him.

"Thirty seconds. All right, Christopher?"

There was a pause of several seconds before a half strangled sound came back that might have meant anything.

"Twenty seconds."

Everyone now was almost holding his breath. Benson's hand went out toward the switch. The room was deadly silent except for a faint hum from the valves. Ten seconds.

Over the loudspeaker came a stifled sob.

"Nine."

"Eight."

"Seven."

Someone coughed. It seemed an act of sacrilege.

"Five."

"Four." Three.

Sir George now had his hand on the switch, poised ready.

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lwo. There was an intake of breath all around the room. "FIRE."

Down went the switch.

Everyone in the room whose duties did not oblige him to rivet his attention elsewhere had his eyes fixed on the switch. Had anyone looked at Sir George's face, they would have seen him in the grip of strong emotion as with closed eyes and strained features he closed the firing circuit. Now, with one accord, those who could do so turned to the observation slits in the wall to watch the happenings outside.

Patiently Chris lay on his contour couch as he heard Sir George call out the timing. Every minute seemed an age. He was sure that no minute could last so long.

"Two minutes."

In spite of the injection he had had earlier, Chris found his heart beating rapidly, and his fears began to increase. So much, so very much, could go wrong. Why should he be the one to undergo this mental torture? Yet he had chosen this course freely himself. What a fool he had been! What if the Russians or anyone else were doing some funny business on the moon—what business was it of his? These thoughts were wicked ones. He couldn't let Sir George down. Or Billy, or any of the others. Oh, why couldn't they shoot the blasted thing off right away and be done with it?

"One minute."

Heavens! That minute had gone quickly. After another similar interval, he would be away—or would he? What was everyone doing in the control room? He could picture Sir George, Mr. Gillanders, the Wing Commander, the others, all waiting comfortably there. In half an hour it would be all over one way or another. Would he be seeing any of them again? Of course he could if he wanted to. He had only to call out that he was too frightened to carry on, and Sir George wouldn't press the switch. Or would he? It wasn't fair of them to ask him to undergo this mental agony, let alone the physical torture that would probably follow. 152

"Thirty seconds. All right, Christopher?"

Sir George's voice sounded calm and confident. But then, Sir George wasn't up here in the rocket! No, he couldn't go on! Yes, he could. He must! He mustn't let his friends down. How hateful it had been that time at the fun fair when they had thought him a coward! Chris tried to reply, but the

conflict within him seemed to paralyze his vocal muscles, and he could only manage a meaningless sound.

"Twenty seconds."

Now the time was passing at breakneck speed, and Chris prayed for it to go more slowly. To avoid the panic that he felt surging over him again, he forced himself to think of the men in the control room, and how they had all wished him luck. Where was O'Neil's lucky shamrock? In his suit somewhere.

"Ten seconds."

Chris tried hard to stifle a sob as he realized how inexorably the seconds were ticking away.

"Nine."

Would he ever live to see Sir George again? Or the Wing Commander?

"Eight."

Or Campion? Or Halrfax?

"Seven."

Or Rodd? A strange sensation came over the agonized boy. Something clicked in his brain. Rodd had made the same gesture after picking up the pencil he had dropped as that spy he had seen near the railway trucks had made. RODD WAS THE TRAITOR!

Three.

He must tell Sir George at all costs. The man was sitting there at the controls and none suspected.

"Two."

Chris tried desperately to marshall his thoughts so that he could give a coherent warning.

"One."

His brain, his vocal chords were concentrating on the single word "STOP." But it was too late.

"FIRE."

The word crashed into his head and all thought processes stopped.

Through the observation slits the watchers in the control room stared fixedly at the rocket, bathed in the light from a dozen arcs. Within microseconds of the word "FIRE" an intensely bright glare appeared at the base of the projectile, dimming the powerful illumination of the apron. This was the most critical period in any firing. Would all the complicated built-in apparatus function, or would there be one terrific explosion ending in a flash months of concentrated endeavor—and one human life?

For perhaps the whole of a second after the glow appeared nothing happened. Then, slowly, the watchers saw the slim, tapering shape begin to lift, as a tongue of white-hot flame seared the concrete of the apron. Now the roar of the jet reached the control room, blotting out every other sound. The rocket, accelerating rapidly, climbed higher and higher. Almost before the observers could realize it, the shape of the projectile was lost against the inky sky, the tongue of flame alone plotting its course across the heavens.

Now the roar had gone, and in front of their dials, switches, and screens, the scientists concentrated on the vital tasks before them. Sir George Benson, with Mr. Gil-landers and Wing Commander Greatrex watching him anxiously, spoke deliberately into the microphone.

"Christopher, can you hear me? How are you, Christopher?"

Time stood still as they all, with bated breath, strained to catch a sound from the silent loudspeaker.

As the fateful word-"FIRE"-struck his ears, Chris lay in 154

an almost semiconscious state, his only impressions being an unbearable noise and a quivering throughout the rocket. How long this continued he could not tell. Now the noise was gone and all he was aware of was the terrible pressure forcing him into his couch. Again the moment of panic, then came flooding back the memory of the centrifuge at Farn-borough. He

had been through this before and had survived it. Here the acceleration was greater than anything he had felt before, yet the comfort was that he was still alive and was equipped in every way to stand the strain. A voice, the voice of Sir George Benson, had, he now realized, been speaking to him urgently.

"Chris, are you all right? Can you speak?"

There was a growing anxiety in Benson's voice. I must make an effort to speak, Chris thought. If only it wasn't for this awful pressure! Valiantly, as the concern in Sir George's tones became plainer, he tried to force his facial muscles to obey his will.

Neither the Director nor his deputy were paying any attention to the quietly spoken readings that were being called out by the men on different instruments. Normally they would have been noting with satisfaction that the projectile was following its planned trajectory, as was plain from the information reaching the control room. Instead, they and the Wing Commander were straining tensely to catch some reply to Benson's urgent call to Chris.

The loud-speaker crackled. Then came a sound from it that was not a crackle. What it was, no one could tell, but the three men around the center table—Chris' closest friends —looked at each other with dawning hope.

"Was that you, Chris?" Benson breathed into the microphone. "If you can't speak, make another sound, any you can."

Again the tense attention. A pause, then from the speaker

came a sound that was undoubtedly made by a human throat.

"It's him!" Greatrex yelled. He had gripped Billy's arm in his anxiety. "At least he's still alive!"

"Quiet," ordered Benson sharply. To the instrument on the table he spoke, "We heard you, lad. See if you can speak again. Are you hurt at all?"

With his acute hearing, Billy could almost detect the struggle the boy in the rocket was having to make an intelligent sound.

"N-nna," the loudspeaker answered. "Aw-rii."

"God be praised," Sir George murmured with feeling. "He's—he's all right."

"Not quite all right," thought Chris grimly as he tried to adjust himself to the fierce pressure he knew he would have to endure for a little time yet. How long had it been since the blast-off? How many more seconds before the fuel was exhausted and the rocket would be able to coast along under its own momentum?

As Chris' thoughts began to clear, his panic subsided. He was thankful that he had not betrayed himself to his friends. He could at least stick this out, for now he was becoming accustomed to the continued acceleration, and the previous experience he had had at Farnborough helped him to become adjusted more rapidly. I must try to describe everything to control, he thought, as he forced himself to pay attention to his surroundings.

"Nn-o damm-age," Chris compelled his lips to say, and he heard the excited murmur of several voices in the control room. Then Benson's voice came over clearly.

"Can you tell us what it looks like up there? One-syllable words will do if you can manage them."

At this definite request, Chris forced himself to look through his helmet to the transparent nose of the rocket. The first thing that surprised him was the amount of light 156

that was entering. Then the moon swam into view, and he realized that the projectile was slowly rotating. How much larger the moon looked! Every feature stood out with clarity, and the boy could identify many of them that were invisible to the naked eye from the ground. However, he found the mental effort of framing words of description beyond his capabilities during the conditions of continued acceleration.

"Moon—big—c-clear," was all he managed to say.

Sir George was much happier about Chris. He knew that the acute discomfort that the boy was now experiencing would be over in a few seconds. That he had managed to remain conscious and could formulate

simple words was a great relief. Now the important period of the flight would soon be starting. It was vital that Christopher should make full use of the period of free fall to direct the telescope-camera onto the area of observation. Had the boy been able to do it, Benson would have liked from him a word picture of his experiences under acceleration, but he had evidently been unable to do this, and a full description would have to await his safe return. Meanwhile the usual instruments which had been attached to Chris would have faithfully recorded many of his physical reactions, critical information from man's first rocket flight into space.

"You'll be in free fall in a few seconds, Christopher," the Director spoke into the microphone. "As soon as the thrust is over, focus your telescope immediately. I'll give you further instructions as necessary."

Chris, still riveted to his couch, could now think more clearly. He would have to tell Sir George about Rodd as soon as possible, but it seemed that it was even of greater importance to concentrate on the task around which the whole project had been focused. He must not waste valuable seconds in explaining his discovery to control.

All this time the rate of acceleration had been steadily increasing, and it had been the human body's facility for

adaptation that had made Chris's condition slightly more tolerable. Yet he knew that as fuel was consumed at a steady rate and the weight of the rocket grew less, the thrust of the jet was having an increasing effect on the ever lighter projectile. At what height was he now? he wondered.

Every man in the control room was fully occupied, except the V.I.P.s who had been tactfully requested to keep away from the others. Billy Gillanders, his initial anxiety about Chris now allayed, moved silently behind the row of scientists absorbed in their instruments. Sir George's attention was divided between the microphone in front of him and the steady flow of data the others were noting and recording. Greatrex, the only non-scientific person present besides the official observers, had least of all to do, but found the quiet efficiency of the arrangements completely fascinating. Somewhere, at a greater height than man had ever before achieved, his young friend had braved the dangers of take-off and was speeding to even greater altitudes. The Wing Commander's admiration for the lad's courage was at its peak.

"Motor off."

The call came from Halifax, one of whose dials was registering the thrust of the rocket. It had suddenly swung to zero, indicating that all the fuel had been consumed and that the projectile was now continuing its journey under the momentum it had built up. Now started the period when Benson expected that the vital information would be obtained. A large screen at one end of the room flickered into life. This was the television screen, now ready to reproduce the picture picked up by the camera in the rocket. Many pairs of eyes watched it expectantly.

As Chris lay imprisoned by the thrust, his brain began to

plan the actions his body would make as soon as it was

released. The moon was still slowly swimming round and

round his cabinet—or so it seemed—but he was unable to

follow it yet through more than about a third of a circle. It couldn't be long now before the motor burned out and he was in free fall. Yes, there it was! Even as the thought was in his mind he felt the terrific pressure vanish as if by magic, and he could no longer even feel the couch beneath him.

Here was the familiar sensation that he had had so many times in the jet plane. His inner organs, so cruelly disturbed during the period of thrust, now seemed to slip back into their normal positions, and he no longer experienced the same difficulty in the movement of his muscles. Still slightly short of breath, he found that he could speak with comparatively little difficulty, so he hastened to report to Sir George.

"In free fall now," he called into his microphone. "Thank goodness that's over. Am preparing to focus on objectives."

As his young friend's voice came through strongly, Benson felt a sense of elation. He was sure now of the success of this critical undertaking. Chris should be relatively safe from now on—that is, unless someone in the room started any monkey tricks. The Director's eyes narrowed at the thought, for during these tense moments he had almost forgotten the other danger which threatened. He must keep calm and watchful now as he directed Chris's actions.

"Height eighty-one miles," Benson informed the distant youth. "Whatever happens, you've made history. Focus now as soon as possible. We're waiting to receive picture."

Billy GiUanders and Greatrex kept close watch on the four suspected scientists, while all others who were not closely engaged in watching their instruments turned their gaze to the wavering shapes that were now visible on the television screen. For a moment the picture was stationary as Chris held the telescope steady. In that fleeting instant of time the boy in the rocket and the watchers in the control room saw the breath-taking picture of the lunar surface as it had never been seen before. Then, almost before the

observers had overcome their awe, the telescope-camera began to waver and the picture on the screen broke up.

"Try and hold it, Chris," Benson called urgently. "That was a wonderful view."

'Til do my best, but the rocket's spinning slowly," the boy's voice came back over the speaker. For a few more seconds the screen was only a confused picture, then again the view steadied, and once more the moon seemed to be peering in at them through a window. At a nod from the Director, O'Neil pressed the switch operating the cameras in the rocket and in control. The area around Pico was plumb in the center of the object glass and the pimple-like objects near its base could just be made out even on the screen.

Christopher, of course, was having a much better view of their objective than the people watching in control. The excellent definition of his telescope, the absolutely clear and empty space through which he was peering, enabled the boy to see what no human eye had previously beheld. As he heard the faint click of the photographic camera going into action, Chris allowed himself to marvel at the scene he was watching. The moon seemed no more than a couple of miles away, and it was hard to be sure that the rocket would not crash-land on its surface in a matter of seconds. Yes, there were the domes. Christopher had no difficulty in counting five of them, but couldn't for the life of him remember how many there had been the last time he looked.

The motion of the rocket made it hard for him to keep the instruments pointing in the right direction. Every fifteen or sixteen seconds the moon slipped completely out of range, to reappear about eight seconds later at the other edge of his field of view. Sir George's voice came through regularly with advice and encouragement. He learned that he was now one hundred and twenty miles high and still going strong. Wonderingly, Chris gazed out of the trans-160

parent casing during the periods when the moon was not in sight, and the procession of a myriad stars passed across his vision. What surprised him most was the vastly increased number visible, compared with those he could see on earth. It was a great temptation to swing over the telescope and look at these bright, unwinking jewels. However the moon was the objective, and Chris concentrated on keeping Pico in the center of his object glass for as long as possible.

"You're doing fine," Benson's voice informed him. "We're getting plenty of pictures and spectroscopic records both here and up with you. Of course yours are the vital ones, for we shall be able to blow up your photographs almost as much as we like. You'll be at maximum height in less than half a minute. Then you'll be starting your fall back."

In the control room the staff had difficulty in suppressing their excitement at the unqualified success that had resulted from the sustained efforts of the last few weeks. Now, surely, nothing could go wrong, and man's first venture across the threshold of space would soon be completed.

Only Rodd thought differently. He was most certainly not going to allow this critical data to be collected. Although he knew he was one of a number under suspicion, he was sure that the Director did not know definitely which of them was the one. Rodd felt an odd thrill of pride surge through him as he thought of the blows he had been striking—and would strike again—against this hateful British Commonwealth, chief obstacle, with the U.S.A., against the world-wide revolution to which he had pledged his life.

Richard Rodd had been the second son of wealthy parents, and had had to play second fiddle to his more delicate older brother. His turbulent nature had revolted against the blatant favoritism of his mother and father, and a flaming quarrel had resulted in his leaving his home for ever, an embittered young man. His father had grudgingly paid him a very small allowance, so

the younger Rodd had fiercely

applied himself to his university studies, achieving a brilliant degree and an important job. He would never forget the triumphal moment when he was able to return his father's last remittance untouched and accompanied by a letter pouring out the pent-up bitterness in his soul.

His outlook had been permanently warped. Naturally in sympathy with the underdog, Rodd had been fertile ground for revolutionary propaganda. Several years ago, soon after his first association with the Rocket Establishment, he had secretly embraced the Communist doctrine, and his new friends found him an able and willing source of secret information. Rodd had never received a single penny for his spying; his sole motive was to help advance what he honestly believed was a revolution to benefit mankind. His position in the Rocket Research Establishment, his burning zeal for his faith, his natural intelligence and ability, all combined to make him into a most valuable agent. Now he was ruthlessly determined to sabotage the work of those around him. At the right moment this would be easy, too easy, to do—and the right moment would soon arrive.

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"Height one hundred and fifty miles. You're nearly at maximum altitude," Benson said into the microphone.

In a few seconds the rocket would be brought to a halt

and would start its fall back to earth under the pull of

gravity. So far everything in this critical operation had been

perfect, thanks to the excellent teamwork of his staff. If

Chris and the vital instruments in his cabin could be recovered unharmed, it would indeed be a red-letter day in the annals of British and Australian science. Whether or not the answer to the main problem was obtained, it was certain that science in general and astronautics in particular would have received tremendous help. Probably they already had sufficient data

for their purposes sealed away in the specially protected camera and instruments in the rocket; still he would tell Chris to continue to focus on Pico as much as possible during his downward path. It would keep him fully occupied during the final maneuver.

Christopher, too, was feeling well pleased with the venture to date. After the period of acute discomfort under intense acceleration, when he had begun to "fall upward" freely he had been able to fulfill his mission. He was sure that the scientists who would examine it would be very glad of the film sealed away in the little box attached to the camera.

"Apex of flight—now! Height—one hundred and fifty-eight miles."

The voice of Sir George was curiously comforting as Chris lay strapped on his couch at that incredible and lonely height. Had it not been for his utter and complete confidence in his friend, Chris knew that his courage would soon have failed him. But now he could only think of the wonderful vision of the skies that lay before him, something no man had seen before, but that countless men would see in the years to come. What would the earth look like from this altitude? He could not see it, for the base of the rocket was still pointing down. Chris could detect little change as the projectile began to fall back. There were no loose articles in his cabin with which he could experiment during this long period of free fall. "Keep on shooting Pico as long as possible," the Director's instructions came. "You'll turn over

and fall nose first as soon as the atmosphere becomes a little less rare. Then you can relax and enjoy the rest of the trip." Chris could not help a smile. Some trip! No. As soon as he could relax, he would inform Sir George of his suspicions about Rodd. Meanwhile he kept the telescope pointing faithfully toward the little mountain.

Rodd's nerves were becoming tense. His plan to sabotage the whole project was now at hand. The rocket was falling back to earth at an ever increasing speed. As he reached forward to pull a switch and set his plan into motion, the loud-speaker crackled and Chris's voice came through.

"She's turned over now, sir, and I can't pick up the moon again. Can I say something very important?"

"Certainly, Chris. Are you all right?"

"Yes, thank you, Sir George. Can I speak with you alone?"

The Director was considerably puzzled. It was, of course, possible to cut out the loud-speaker and wear earphones; then no one else in the control room would be able to hear what Chris had to say. Why ever would he want the speaker cut out? Unless—

Everyone in the control room had heard this unusual request. Mr. Gillanders and Greatrex assumed that perhaps Chris was feeling ill and did not want them all to know. They knew the stubborn pride of the boy. Only Rodd had a faint glimmer of what Chris' request might really mean. He paused for a moment in his stealthy movement to close the vital switch. Many curious eyes watched the Director as he put on the earphones after having made the necessary adjustment to the circuit.

"I'm with you now, Christopher," those in the room heard Sir George Benson say.

There was silence for perhaps three quarters of a minute as the Director alone listened to what the youth in the rocket had to say. Rodd, watching him closely, saw the grow-164

ing amazement in his expression. Then the Directors eyes sought him out grimly. In a flash Rodd knew that somehow the accursed youngster had discovered his secret and that he had now told the chief. Right! This was it!

Even as Sir George Benson began to remove the earphones, Rodd, with one swift movement, sprang from the chair on which he had been seated and turned facing the room, his back to his section of the instrument panel. In his right hand had appeared an ugly looking automatic which he directed steadly at Benson. With his left hand he reached and pulled over the switch that had previously been his objective. For a moment everyone in the room was frozen into immobility.

Then a hubbub arose. The scientists and technicians looked at Rodd with amazement and unbelief. The important visitors stared uncomprehendingly at the scene before them. Slowly, his face pale with fury, the Director rose from his table.

"'Rodd," he barked, "put that gun down!"

The traitor's face twisted into a sneer. His eyes narrowed.

"Not on your life, my dear Sir George," he returned. "Ah! that was a joke I hadn't intended. Stay where you are, everyone. The first man who moves will get a bullet in his stomach."

No one moved.

"You filthy traitor!" Billy Gillanders exploded. "So you're the one who's been selling us to the Russians?"

"Not 'selling' you, but giving you away, Billy boy. You wouldn't understand if I told you about it. But I'm glad I've been able to stop this little stunt."

"What have you done, Rodd?" Benson grated out the question.

"I'm not telling. Find out for yourself!"

Billy Gillanders was peering intently at the panel behind

Rodd. Suddenly he saw the switch that the man had depressed.

"He's cut out the automatic operation of the parachutes," he shouted.

Everyone stiffened. Those who had been engaged on the construction of the rocket knew that the three parachutes could be operated automatically or manually, and that the switch that Rodd had pushed down would cause the automatic functioning to be eliminated, leaving manual control the only way of releasing the three parachutes. And the three switches that were the only means of doing this were behind Rodd's back, behind that businesslike gun in his hand.

All that happened in the control room was clearly heard by Chris as the rocket continued its plunge to earth. The crash of Rodd's chair, Sir George's command to put down the gun, Gillanders' discovery of what Rodd had done. So the parachutes would not operate automatically? So what?

Fortunately Chris did not remember that the manual switches were under Rodd's control, and did not realize that the scientist was in a position to prevent their operation. He was puzzled but not alarmed at the tense silence

which followed the Deputy Director's remark. Surely it would be a simple thing for someone to work the parachutes when the correct heights were successively reached!

Rodd held his gun steadily. Every second that he could hold off any attempt to rush him and to gain control of the parachute switches meant that the rocket, with all its vital information and that accursed youngster inside, was increasing its rate of fall by nearly twenty miles per hour. Soon it would be too late for the parachutes to prevent the whole projectile and its contents from crashing somewhere in the desert with meteoric speed. Then he would shoot his 166

way out of the control room and put into operation the escape plans he had prepared.

"Rodd, are you going to put down that gun?" Benson asked sternly.

"No. And I will certainly shoot the first man who moves. If you don't think I mean it, watch this!"

As he spoke, Rodd moved his automatic away from Sir George for a brief moment. The sound of an explosion filled the room, and Halifax, who had been standing nearest, slid to the floor with a faintly surprised expression on his face and a neat round hole in his forehead.

"You filthy murderer!" burst out Gillanders. "You'll hang for certain now."

"Maybe, but you've got to catch me first! Perhaps you'll believe, after this little demonstration, that I shan't hesitate to shoot the first man who moves."

The gunman's face was glistening with perspiration and his eyes shone in a manner not quite sane. Horror reigned in the room as all realized Rodd's intention that Chris and the rocket should be destroyed. Though they all remained frozen where they stood, there was not one who did not realize that with each second the projectile was falling faster and faster to its doom.

It was when he heard the sound of the shot and the exclamations of horror that followed, that Chris understood the peril of his own position. If the traitor was at bay in the control room, how could anyone get to the switches

to operate the parachutes? He fought to throw off the wave of cold terror that began surging over him.

Was this to be the end—buried with the crashing rocket in the Australian desert? Had he only a few more seconds to live? Would he feel anything? Couldn't they possibly do something to save him? He didn't want to die; he had to be at Cambridge for next term. They must do something—somehow!

"Sir George! What's happening? The parachute?" Chris's voice, hoarse with fear, sounded in the control room.

Benson stiffened in mental agony. Now it was plain that his young friend knew he was crashing to his death. The results of their research would be destroyed too, but what did that matter compared with the life of the gallant youngster whom he had persuaded to take on this job?

The huge muscles of Billy Gillanders were tensed as he, too, thought of the boy of whom he had grown so fond. His eye measured the distance between the murderer and himself. Should he make a dive and chance the shot that would come? Billy had no doubt that Rodd would fire—and he was too near to miss. If he was killed, what about Helen and Betty? Oh God, what should he do?

The Director seemed to sense the conflict that was going on in the mind of his Deputy. Catching his eye, he gave a slight but firm shake of the head. No. It was his duty to try to save Chris. He had not the same family ties as had Billy. Moreover he was in charge and responsible for the conduct of the Establishment and responsible for the safety of young Christopher. Sir George drew in a deep breath and made ready.

He was too late. Greatrex had beaten him to it.

The mind of the gallant Wing Commander had been working furiously. He had been appointed especially to protect young Chris, and in doing so he had grown very fond of the lad. He had spent more time with Chris than anyone else since they first met in London those long weeks ago. He wasn't going to let the boy down now. Besides, he had a duty as an officer in Her Majesty's Royal Air Force.

Greatrex flung himself through the air at Rodd and the unwavering gun.

Christopher could scarcely recognize that it was his voice that had blurted out that panic-stricken appeal to Sir 168

George. Of course he was afraid; who wouldn't be? But with a supreme effort he kept himself from making further pleas into the microphone. He could trust Sir George and Mr. Gillanders to do all they could to help him and to save the equipment.

Ah! The camera! If the rocket crashed it would be smashed up and the vital photographs destroyed. The Director had frequently explained that the answer to the critical question would be contained in the instruments inside that cabin, and in the magazine of the camera in particular. With fumbling fingers Chris began to explore how the magazine was fastened.

The rocket was falling faster and faster.

As the Wing Commander leaped, the gun barked. True to his threat, Rodd had fired point blank at the officer, and the bullet struck him squarely in the chest.

The momentum of his lunge carried Greatrex forward. His body had shuddered slightly as the bullet thudded home, but his outstretched hands had grabbed at the gun before he slid to the floor. As the shot rang out, Billy Gil-landers, unable to bear it anymore, flung himself in a rugby tackle at Rodd's legs. His great arms closed around them as the murderer tried to avoid Greatrex's clutching fingers, and the pair fell heavily on top of the twitching body of the Wing Commander.

Men from all parts of the room rushed to help seize the gunman, but it was difficult to intervene in this life-and-death struggle as Billy and Rodd rolled along the floor fighting for possession of the gun. In a flash Benson had leaped to the instrument panel, narrowly avoiding the body of the man who, it seemed, had given his life for his friend.

Reason told the Director that it was too late to save Chris, and that the rocket had already built up too much velocity to be halted by the parachutes. Nevertheless he

was determined to do what he could, and he flung over the first two switches.

Inside the cabin Chris persisted in trying to release the camera magazine, which some instinct was telling him must at all costs be preserved. His movements were awkward and slow; the G-suit and the gravity-free condition combined to make his task more difficult. But at least the effort helped him to take his mind off the fate toward which he was rushing with such phenomenal speed. Even if he succeeded in freeing it, Chris had no idea as to how he could protect the magazine. His action seemed purely instinctive. As his fingers fumbled with the fastening, he felt little rivulets of sweat running down his face. His whole body was becoming sticky with perspiration, for the cabin was getting uncomfortably warm. Of course it was friction with the atmosphere that was causing it. Would the rocket burn out like a meteor before striking the earth?

A severe jar shook the rocket. It was the first of the parachutes breaking free. Although the air was still thin, such was the speed of the projectile

that the fabric was instantly torn into shreds that flapped uselessly behind. The second parachute suffered a like fate. Neither of them had caused any appreciable lessening in the rate of fall.

Back in the control room the titanic struggle between Rodd and Billy was nearing its end. As they rolled over the floor together, the Deputy Director managed to twist the automatic out of the traitor's grip, and it was instantly seized by the nearest man. The pair somehow staggered to their feet close to the end wall. It was then that Billy, his whole being consumed with a burning hatred of this man who was causing the death of his young friend and the destruction of the results of long months of toil, smashed his fist into the distorted face of his opponent. Into that 170

blow went every ounce—and more—of Billy's great strength. It gave him a momentary satisfaction to feel his knuckles burying themselves into the place where RodcTs nose had been. With a sickening thud the man's head struck the wall behind him, and the fight was over.

The Director now revealed his qualities of leadership. Having released the first two parachutes, he ordered every man back to his post. His orders came thick and fast: plot exact course of the rocket; advise helicopters; despatch crash teams; bring one helicopter to wait for him outside.

Still standing at the instrument panel, Benson took the only action now possible in an attempt to save Chris. He pressed the button which would cause the explosive rivets holding the nose cabin to the rest of the rocket to be fired. This would separate the lighter compartment from the heavy part of the projectile, which would now crash unhindered somewhere in the scrub.

The scientists, back at their instruments, picked up the course of the falling rocket, measured its speed of fall, even its temperature. As the nose separated, all attention was focused upon it. Would the last parachute slow it down sufficiently to permit Chris' survival? As soon as he had received confirmation from one of his staff that the separation had taken place, Benson released the chute. Then he strode quickly over to the altimeter, watching the needle anxiously.

There was no need for the man sitting at the altimeter to call out the readings, Sir George himself could see them only too well. The last chute

had slowed down the rate of fall, but the impact would still be far too great for there to be any hope of survival. Benson straightened up, his eyes hot and smarting. So this was the end!

Sounds came from the loud-speaker—sounds that the Director tried not to hear. Chris was still conscious, but only barely. Quickly Sir George went to another switch and pressed it. It was the last thing he could do for his young

friend, the gallant youngster who was giving his life for his country. It was the switch marked "Anesthesia."

Chris had now released the magazine from the camera. How he had done it he didn't know. Probably by sheer luck. As his breathing became more and more difficult in the rising temperature, he tried to speak to the control room to tell them what he had done, but he found it impossible to form words with his dry and swollen tongue; only vague animal sounds went over the intercom.

A third shock communicated itself to his reeling senses. It was unlike the other two, but the youth was too far gone to know that his life compartment was now free from the drag of the heavy rocket. Lights seemed to dance before his eyes and the roaring in his ears became like thunder. Convulsively he cradled the magazine to his body. There was nothing else he could do. Seconds later another jar shook the cabin, and the magazine seemed to bury itself in Chris' stomach and knock all the hard-won breath out of his lungs. It was the last parachute—the last hope.

All sensations now seemed to have gone out of Chris' body. Only his mind seemed alive. That the parachute was working he had no doubt from the different "feel" of his fall. But now he was no longer interested—only mildly curious about the flashing lights that seemed to shine right into his brain. A strange hissing sound impinged on his consciousness, and at the same time he became aware of a faintly sweet smell, though now he was no longer capable of realizing that the anesthetic was being released inside his helmet.

Gradually the flashing rights focused into one distant bright spot toward which he seemed to be rushing at breakneck speed. All around him was darkness. Only the light beckoned in the distance. Now the darkness around

him seemed to take on solid form, like the walls of a tunnel. The 172

brightness at the end grew nearer and all Christopher knew was that he wanted to reach it more than he had ever wanted anything before. Somehow he was sure that in that bright glow lay happiness and peace and rest. With a half-formed prayer in his mind he came to the end of the tunnel, and all about him was the light.

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hapter Seventeen

The anxiety of Sir George for his young friend's safety was such that he strode over the inert form of Greatrex without a thought. Now he had only one concern—to reach the spot as soon as possible where the rocket cabin would crash. With rapid instructions to Billy Gillanders to keep in constant radio touch, Benson sprinted out the door and into the helicopter which had settled outside.

Still breathing quickly, both from emotion and from his recent struggle, Billy surveyed the control room. The V.I.P.s, completely forgotten during the recent dramatic turn of events, were talking together in a small group. Somehow they felt like intruders in the drama they had seen enacted before them. Each of the scientists and technicians had returned to his job, leaving only the three still figures as witnesses of what had happened.

The roar of the rising helicopter was heard through the concrete walls as Sir George sped to the spot where his young friend would crash. Searchlights were switched on in an attempt to pick up the falling rocket head.

Inside the control room the Deputy Director was able now to give some thought to the casualties. He called for

the medical officer, but learned that he had grabbed his emergency case and rushed off with Benson. A message was sent to the town hospital for another doctor to come at once. Halifax was beyond all human help, and a handkerchief was placed over his face. The Wing Commander was still breathing. There was a small trickle of blood running from one corner of his mouth. His wounds were bleeding profusely; immediate attention was essential. Two of the scientists left their dials and began gently to remove

Great-rex's tunic and shirt. They bound a large pad tightly over the place where the bullet had entered his body. The C.I.D. man had sprinted off to the first-aid room for a stretcher. Billy needed all his self-control to curb the burning anger he felt as he turned to the third silent figure. Rodd had had a terrific smashing from Billy's hamlike fist and the concrete wall, but he was still alive. Blood was oozing from his face and head.

"It's crashed!" one of the men shouted.

"Exact location?" snapped Billy.

Another member of the staff supplied this information. Immediately Gillanders called up his chief in the helicopter and gave him precise directions. The other two machines were in on the call and were directed to hurry to the spot.

Activity in the control room had now come to an end. The men congregated silently around the three casualties. Soon the ambulance was heard outside, and in a matter of seconds the two wounded men were in it and being sped to the hospital. There was nothing anyone there could do to help young Christopher or to save the photographs and records. All that could be done would be handled by the outside team under the personal supervision of the Director. Billy sank into a chair to await a report from him.

The pilot of the helicopter nodded as Sir George gave him the crash location which he had just heard from Billy. 174

It was several miles away and it would take them some minutes to reach the spot. Meanwhile one of the other machines which was nearer would shortly be landing to locate the wreckage. Benson asked the crew to report to him as soon as they had done this, and to light a flare.

As the rotors whirled above his head the Director counted each second as an age. Would to God young Chris had been spared! With a choking in his throat he admitted to himself how much this youngster had come to mean to him. Intently he stared ahead, trying to pick up any pinpoint of light that could possibly be the other helicopter's flare. Then the headphones crackled. The pilot of the other machine reported that he had landed beside some wreckage, which had turned out to be a portion of the main body of

the rocket. So the cabin could not be far away.

By now the third helicopter had joined in the search. Soon Benson could see in the distance two fingers of light moving over the scrub as the two machines probed the ground with their searchlights. Sir George had their own light switched on, and all eyes were fixed on the moving patch of illumination.

"There it is!"

The shout came simultaneously from Benson and the M.O. In the circle of light from their machine there appeared the dark shape of wreckage. The momentary glimpse was sufficient to convince the Director that the search was over. Yes. As the light picked up the object again, the transparent nose of the cabin reflected it back. Rapidly the pilot put the machine down within a few yards of the wreckage.

While the helicopter was still some feet from the ground, Benson leaped out. Recovering from a slight stumble, he ran toward the dim irregular shape.

His heart beating fast, he soon covered the distance. Then he stopped. Before him lay the twisted mass of metal

and plastic, with the torn remains of the parachute limply stretched out behind. Cold dread froze him stiff for a time that seemed timeless. Then, with grief choking in his throat, he seized the nearest piece of metal and pulled.

Though the casting was quite hot to the touch, Sir George did not notice. The impact split the sides of the cabin and a large section yielded to his frantic pull. In his hasty jump from the helicopter, Benson had left behind the powerful electric flashlight he had intended to use. Now he could see the shadowy interior only dimly. With a sob of which he was unconscious, Sir George fell to his knees so that he could reach inside. Behind him appeared the beam of the flashlight carried by the doctor who raced up. By its diffused light he saw all he needed to see. Christopher's form lay twisted grotesquely on the damaged couch.

A hand firmly applied to his shoulder forced the grief-stricken man away

from the cabin, and the doctor took his place. As he stood dumbly by the mass of wreckage, Benson silently offered up an agonized prayer for forgiveness. He had caused the death of this boy. Tears smarted in his eyes and rolled unashamedly down his cheeks. The pilot, who had stayed to light a flare, now came up. He discreetly failed to notice the Director's emotion and bent down by the doctor who was fumbling inside.

How long he stood there Benson never knew. At some time the other two helicopters arrived with their crews. Now there was a little knot of eight or nine men around the wreckage. None of them intruded on the Director's grief.

For some reason Benson became aware that he was sitting on a small hillock some fifty yards away from the crash. He did not remember walking there. Now as he shivered in the growing dawn, he saw the medical officer striding toward him. He looked up listlessly.

"He's alive!" the doctor yelled.

For a moment Benson did not comprehend. Then he 176

fought back the wild hope that these two words might mean. No, it couldn't be! Not in that awful tangle of shattered metal! No one could have survived that hideous crash! The doctor repeated his magical words. Sir George's heart leaped. Could it be true after all?

"Has he a chance?" Benson forced himself to ask.

"Not much, I'm afraid. But we can try."

A great breath, almost a sob. Then he clenched his fists and stuck out his jaw.

"My God!" he breathed, "We'll save that kid if it's the last thing we do!"

"I've given him an injection. We've only minutes to spare."

"Right," snapped Benson, now galvanized into action. He sprinted to the nearest helicopter and flung himself onto the radio. As he did so, he saw through the corner of his eye a number of the crewmen gently carrying that precious, silent bundle on the specially constructed stretcher. Fortunately

the radio was "alive" and required no warming-up. Billy's anxious voice responded immediately.

"We've got him, Billy. He's still alive—but only barely. The 'copter will land outside the hospital in seven or eight minutes. Emergency staff to be ready. Blood group to be obtained from Records and plasma laid on. Over."

"Thank God he's still with us. Message received and understood. Action immediate. Over."

"The medico will be passing on further instructions during flight. Drop everything, Billy. We've got to save him. Over."

"By heavens, we will! Breaking off now to make sparks

The radio went silent and Sir George knew his deputy had jumped into action. Now the bearers were outside and he sprang down to help load the stretcher. Only the doctor would accompany it, owing to the restricted space inside

the machine. Benson would follow in the second helicopter whose rotors already had started to turn. Swiftly the aerial ambulance rose with its precious burden into the lightening sky, and the pilot pressed with all speed to the Establishment Hospital. Scarcely a minute later the machine carrying the Director rose and followed.

During the brief flight Benson followed over the radio of his own machine the careful instructions the doctor was giving to Billy. In turn the Deputy Director was repeating them over the telephone to the matron at the hospital. At one point Sir George broke in to ask if the doctor would like to have the assistance of a surgeon, and he replied that he would certainly like either Carruthers or Wheway but one was in Melbourne and the other in Adelaide.

"We'll get them both," snapped the Director. "Billy, will you make the wires red hot or shall I?"

"Leave it to me, chief. Ill get them here if I have to have them both knocked out to do it."

The blazing lights of the hospital were soon below the helicopter. As the

machine began to settle toward the open ground nearby, Benson could see that the other one had already landed. In a few moments he was racing across the ground to the lighted doorway. He was met with the information that Christopher had already been taken into the operating room where two of the technicians, rushed over by Mr. Gillanders, were trying to cut away the G-suit. Meanwhile the doctor was "scrubbing up" ready for his task. Realizing that there was nothing more he could do there, Benson jumped into a jeep someone had left outside and scorched over to the control room where he knew he would find Billy.

"Had them?" he jerked out as soon as he entered.

"Had Wheway all right, but haven't contacted Carruthers yet. Still trying," Billy replied equally abruptly as he covered the mouthpiece of the phone with his hand. 178

"Fixed transport yet?"

"Calverley's on another line to Canberra to rope in the R.A.A.F."

Sir George could see that everything possible was being done to get for his young friend the finest possible surgical assistance. He knew he could leave old Billy to overcome all obstacles ruthlessly. The Director permitted himself a glance around the control room.

A number of scientists were still grouped uncertainly near their instruments, but the visitors and official observers had disappeared. The body of Halifax had been removed. Benson felt himself irresistibly drawn back to the hospital. When he reached there a second time, he was told that the doctor was now in the operating room with Chris, doing an emergency operation. Both Greatrex and Rodd were being prepared for their turns.

Again there was nothing Sir George could do but wait. He paced restlessly up and down the corridor as the slothful seconds ticked by.

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hapter Eighteen

For three weeks the flame of Christopher's life flickered. At times it seemed to grow a little stronger, only to sink almost to extinction. It would have

been impossible to suppress news of the happenings at Woomera even had the British and Australian governments wished to resist the clamor for information. The public was passionately interested. A statement had been released giving an account of

most of the happenings at the Research Establishment, though the results obtained were being kept secret until they had been carefully studied. The death of Halifax and the gallantry of the Wing Commander had received much attention, and public tribute had been paid to these two men. But now it was around Christopher that the attention of the whole Western world was focused.

Just as for royalty or some great personage, a medical bulletin was issued each day. It was signed by no less than six of the world's most eminent surgeons and physicians. America had insisted on sending over two of her foremost men, and Britain had sent two more. Between them, the six experts wrestled for Chris' life. The Wing Commander's progress was steady but slow.

Day after day the bulletins were the same: "Christopher Godfrey's condition is unchanged," followed by the six eminent names. Only occasionally did the form of words vary. Then the bulletins were exhaustively analyzed in all the newspapers in the hope that some encouragement could be gleaned from them. Discussions followed in trains and buses, for rarely had such tense interest been shown as in this titanic struggle being fought for the life of one boy.

At Woomera, the Establishment seemed to be centered on the darkened room in the small hospital. There a small still figure, almost buried by the great fracture cage, still lived on in the oxygen tent. Every day seemed a miracle of survival as hopes faded and returned.

Mrs. Ingall and Miss Darke had been flown over from England and were staying at the Gillanders' home. A local committee at Norton, headed by the headmaster's wife, had undertaken to run the little shop during its owner's absence in the belief that it was perhaps making a contribution to the possible recovery of the small town's most famous son.

Both Helen and Betty Gillanders had to be sternly informed by Billy that the strict ban on visitors applied to 180

them, too, for they had tried devious means to get inside that darkened room. Their only consolation was the promise that Christopher and his aunt should have a long stay with them once Chris was convalescent—not a very hopeful prospect, the Deputy Director told himself with a sigh.

Sir George Benson visited the hospital almost every day. The only times he had missed were the days when he had to be away in Canberra while the results of the rocket flight were being examined. Benson had positively refused to return to London until Chris had—well, until Chris was out of danger. As a privileged person, Sir George had had several peeps into the ward, but the sight of the unconscious boy depressed him deeply. He still frequently indulged in bouts of self-reproach as he anxiously questioned the surgeons. One day a strangely subdued Greatrex was wheeled along for a glimpse of the small, still figure.

By a curious irony, in the room next to the one in which the fight for Chris' life was being waged, Richard Rodd lay, recovering from his injuries. On the instructions of Sir George, every attention was paid to the traitor, several of Chris* surgeons assisting. However no bulletins were issued about this patient and two burly men, remarkably like police officers, were his constant companions.

At long last, thanks to the skill of the doctors, the patience of the nurses, and the prayers of countless thousands, Christopher regained consciousness. His life had been saved. He would live! In newspapers and on radio the good news reached the public. It seemed that a great sigh of relief went up from the world whose hero the boy had become.

Sir George would never forget his feelings when he entered the room after being told that Chris was conscious. Still darkened, the room seemed already to have taken on a more cheerful atmosphere in contrast with its previous gloom. With a few quiet steps he reached the side of the

bed and, with pounding heart, looked down on his small friend.

Two large, dark eyes like miniature pools in a thin, white face. For a second or two Benson stared, too full of emotion to speak. Then the incredible boy, still too ill to speak, slowly winked an eye. In spite of himself and to his chagrin Sir George felt the tears smart in his eyes. Again

that slow movement of Christopher's eyelid—so full of meaning, so very precious. Silently Benson left the ward, a prayer of gratitude singing in his heart.

Each day Chris grew stronger. Mrs. Ingall spent many silent hours at her nephew's bedside. Helen and Betty were allowed to peep in at the door. Greatrex was wheeled in frequently. Billy, too, managed to propel his huge bulk with reasonable gentleness across the floor. But it was to the Director's visits that the patient looked forward most. Soon they were able to talk together for short periods, the nurse having to be very firm about the ration.

The skill of his team of doctors and the untiring efforts of the nurses, together with his own fighting spirit, speeded Christopher's recovery at an increasing rate. Benson had promised Chris that on the day the fracture cage was removed he would tell him all that had happened during the firing and since. One day the Director entered the room, now fully lighted, to find that he must fulfill his promise. The bed looked very flat now that the unnatural bulk had been taken away. Smilingly, Sir George settled himself on the chair alongside.

While Chris listened with close attention, Benson gave a clear account of the dramatic events in the control room, right from the time of the firing. Both the man and the boy felt a deep emotion as Chris heard for the first time how his friend Greatrex had flung himself onto the traitor. Now he knew that he owed his life to the man who had been his constant companion during the last few eventful months.

Only the bravery of the Wing Commander had gained those vital seconds which had enabled Sir George to slow the falling rocket enough to prevent the crash from proving fatal.

Sir George described how Billy Gillanders had dealt with the traitor while he himself was wrestling with the instruments.

"I suppose Rodd will face a murder charge?" Chris ventured.

"No, he'll never come before a court. His skull was fractured in the fight and his brain was permanently injured. Rodd will be completely paralyzed for the rest of his life."

Both were silent as they thought of this tragic fate. Christopher changed their line of thought.

"How did the observations come out? Have you found out what the domes are?" he inquired eagerly.

"Both the photographs and the spectroscopic readings were admirable. And it was you who prevented their complete destruction."

"Me?" asked Chris, puzzled.

"Yes, you. Before you lost consciousness you detached the magazine from the camera and held it close to you. Most of your injuries were caused by its impact against your body when you crashed. The magazine itself was almost undamaged."

"I don't remember a thing about it. And what have the photographs shown?"

Benson paused for a moment before replying. Then he spoke thoughtfully.

"All the observations both from the rocket and from the ground instruments are still being examined, but sufficient has already been found out to lead to two conclusions— both very startling. One, that the domes are indeed artificial. Two, that they are not the work of the Russians."

It was some time before Chris grasped the full signifi-

cance of what he had heard. Then questions tripped over each other from his tongue.

"But how do you know it's not the Russians? Who is it, then? What are they for?"

"Now steady, young Christopher. You mustn't get too excited you know, or the nurse will turn me out. I'll tell you as much as I can if you'll give me time. Of course only a little of this information has been published yet, for most of it is still being subjected to the closest scrutiny.

"Well—the domes alongside Pico are far too smooth and regular to allow for any doubt about their artificial origin. There seem to be two distinct

kinds, one much larger than the other. However, all the large ones are exactly the same size, as are all the small ones. What they are for we don't know."

"But how do you know they're not the work of the Russians?"

"Quite simply and conclusively. The spectroscope shows that the domes are constructed of some element completely unknown on earth. Neither has it been detected previously on the moon. So that, I think, lets out our friends the Russians."

"But why did they try to prevent the firing? What about the man who called on Aunt Mary? Mr. Rodd was in their pay, wasn't he?"

"The answers to your first two questions are that this was purely routine stuff. Since both sides of the Iron Curtain were highly suspicious of each other, each, on principle, tried to hinder anything the other did that might have the slightest military significance. I am fairly well known to the Russians, and I'm afraid that it was my call on your aunt that gave one of their agents the idea that he, too, should pay her a visit. These chaps leave no stone unturned in gleaning every possible scrap of information about what the other side's up to. 184

"About Rodd? The chap was a fanatic. As far as weve been able to find out, he has never received any payment for all the information he has been supplying for years. It was just some kink he had. In trying to cause your crash and to destroy all the records, he was acting entirely on his own initiative."

"Does—does what the spectroscope showed mean that someone from—well, from another planet has built the domes?"

"Is building the domes," corrected Sir George. "More have appeared since your little trip. Well, whatever they are, or whoever has built them, a most profound impression has been made on the people of the earth. Christopher, you will never recognize the political situation when you get back into circulation. Would you believe it, East and West are like long-lost brothers?"

Chris looked incredulously at his friend.

"It's true! When our government realized that some outside agency was responsible for the domes, it decided to inform all governments in the world. The Russians are as curious as we are, and there has been the completest exchange of information by all. Next week, that is on December twenty-first, there's to be a special session of the United Nations to plan action at world level. So it seems that the domes may have done something that generations of diplomacy could scarcely hope to achieve. I've been requested to attend the U.N. meeting, so I shan't be with you for Christmas."

"Heavens! I hadn't realized Christmas was so near," exclaimed Chris. "I shall miss you very much."

"Me, too. But I'll let you in on a secret. If you keep up this rate of progress, you'll be spending Christmas with your aunt as guest of Mr. and Mrs. Gillanders, and Whiskers will be one of the party."

"That's great! When will you be back?"

"I don't quite know. Of course you're staying for a few weeks with Billy, Helen, and—er—Betty. I'll be back before you leave them. Now that's enough for today. I must go now, but I'll be seeing you plenty of times before I leave. Good-by!"

After Sir George had gone, Christopher realized how tired the talk and its excitement had made him. As he relaxed into his pillow he began to turn over in his mind the information his friend had given him. But by the time Mrs. Ingall came to see him, he had fallen into a sound sleep.

True to his word, Sir George Benson paid several more calls on the rapidly improving boy before he left. When he told Chris what a splash had been made about him in the press of the world, and how he had become a national hero, the boy flushed uncomfortably. He implored Sir George earnestly to do what he could to stop it.

Benson smiled down at his troubled young friend. "I'm afraid it's too late to do much. But there's a bright side. A National Testimonial Fund has been started, and already over one hundred thousand pounds has been subscribed."

"But I don't want the money," Chris wailed.

"No. You'll have all you want from Her Majesty's Government. So it is proposed, subject to your approval, to set up and endow the world's first Chair of Astronautics at your own university, Cambridge."

"What a wonderful idea! So space travel really is getting nearer," breathed Chris.

"Not only is getting nearer, but is getting desperately urgent. Remember those mysterious domes."

On the morning before leaving for the United Nations, Sir George and Greatrex made a call on Chris together, Benson was delighted to see Christopher, wrapped in a dressing gown, sitting out of bed. Now he could really discuss his future.

Chris had accepted as inevitable the delay of a year in

his entry to Cambridge. Benson, his aunt, and the Gillan-ders family had dinned it into his head that he must take a long holiday and a complete rest before even thinking about work again. Besides it would be difficult for him to enter the university during the middle of a year. So many exciting plans had been made for the near future that Sir George was surprised to find his young friend deep in gloom.

"What on earth's the matter with you?" he demanded.

"What's worrying you, young feller-me-lad?" asked the Wing Commander.

Chris denied that anything at all was troubling him. But when Sir George persisted, he burst out, "Well, you see, the doctor has just told me that Tve grown two inches since the crash. He doesn't know why, but thinks maybe the radiation I had up in the rocket may have started things up. He believes I may still be growing."

"Why that's good news, Chris. Why in the world are you depressed about that? I know how you've always felt about being small."

"That's all very well," said Chris in a worried voice, "and I suppose later on I'll be glad. But right now I'm wondering if I'll get too big to be on the

Cambridge boat race crew!"